Making the Lives of Children and Young People More Visible in Europe

Thesis Submitted for the Award of MSc by Research

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Declaration

I hereby certify that this material, which I now submit for assessment on the programme of study leading to the award of Master of Science by Research is entirely my own work, and that I have exercised reasonable care to ensure that the work is original, and does not to the best of my knowledge breach any law of copyright, and has not been taken from the work of others save and to the extent that such work has been cited and acknowledged within the text of my work.

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Date: _____

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"If I have seen further, it is by standing on the shoulders of giants." Isaac Newton, 1676

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List of Abbreviations

BRIDGE Health	BRidging Information and Data Generation for Evidence-based Health policy and research
CHILD	Child Health Indicators for Life Development project
CREAL	Spanish Centre for Research in Environmental Epidemiology
DG SANCO	European commission´s directorate general for health & consumers
EC	European Commission
ECHI	European Core Health Indicators
ECHIM	European Community Health Indicators and Monitoring
EU	European Union
Eurostat	Statistical office of the European Union
HIS	Health Information System
INSERM	French National Institute for Health and Medical Research
ISGlobal	Barcelona Institute for Global Health
NIPH	Norwegian National Institute for Public Health
OECD	Organisation for Economic Cooperation and Development;
RICHE	Research Inventory for Child Health in Europe
RMNCAH	Reproductive, Maternal, Neonatal, Child and Adolescent Health
SPSS	Statistical Analysis Software Package
WHO-EUR	World Health Organisation Regional Office for Europe
WHO	World Health Organisation
WP7	Work Package 7

Definition of Terms

Health information

The partners of BRIDGE Health (BridgeHealth, 2017), used the concept of health information as defined in the World Health Organisation (WHO) European Health Information Initiative (EHII);

'Health information is all data, evidence and knowledge that determines health and health service performance at individual or population level to facilitate research, promotion, prevention, care and support policy-making' (World Health Organization, 2017a).

Health Information System (HIS)

The WHO defines a health information system as 'an integrated effort to collect, process, analyse, report, communicate and use health information and knowledge to influence policy and decision-making, programme action, individual and public health outcomes, and research' (World Health Organization, 2003)

EU Health Information System (EU-HIS)

The BRIDGE Health (2017) partners adapted the definition;

'An EU health information system is an integrated effort to collect, process, analyse, report, communicate and use comparable health information and knowledge covering all Member States to understand the dynamics of the health of EU citizens and populations to support policy and decision-making, programme action, individual and public health outcomes, health system functioning, outputs and research in the European Union'.

Health

As per the WHO definition, health is defined as being a 'state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity'. (World Health Organization, 2017b)

Well-being

Well-being can be defined broadly in the research literature. It can be related to meaning and purpose in life (Dolan, 2014; Ryan and Deci, 2001; Ryff and Singer, 2008),

whilst the context of “subjective well-being”, is most frequently measured as life satisfaction, and the presence of positive and negative mood (Diener et al., 1999).

There is a multi-dimensional concept to well-being, which encompasses both subjective and objective measures of a wide range of life domains, i.e. economic circumstances, social participation, mental and physical health and environmental conditions (Stiglitz et al., 2009). The term well-being can be described as one’s “quality of life and the various factors which can influence it over the course of a person’s life” (Department of Health Ireland, 2013, p.9).

Quality of life

Similar to well-being, the concept of quality of life is complex and can encompass both individual subjective assessments of life quality, but also the objective and subjective life conditions and circumstances (Brown et al., 2004; Lawton et al., 1999).

The WHO established a working party on quality of life using the following definition:

“Quality of life is defined as the individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. It is a broad ranging concept affected in a complex way by a person's physical health, psychological state, level of independence and their relationships to salient features of their environment” (World Health Organization, 1997)

Definitions of well-being and quality of life have strong parallels between them. In recent years, the definitions have converged so that they are used interchangeably (Camfield and Skevington, 2008).

Indicator

Many definitions of indicators exist in the literature and are in use internationally, varying slightly depending on their intended use. The WHO defines an indicator as:

“A variable with characteristics of quality, quantity and time used to measure, directly or indirectly, changes in a situation and to appreciate the progress made in addressing it” (World Health Organization, 2009).

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Overall Abstract

Making the Lives of Children and Young People More Visible in Europe

Background: The health and well-being of children and young people, i.e. those aged zero up to and including 24 (UNCRC, 1989; UNDESA, 2008), is of significant importance to European public health. Current national health information systems differ significantly (Rigby et al., 2002), and as of yet, there is no coherent health information strategy available for Europe. The fragmented databases, health information inequalities, and overlap of data, results in a scattered and unsustainable health information situation (Bogaert and Van Oyen, 2017; Kilpeläinen et al., 2012; Verschuuren et al., 2013), in which many children's lives to become invisible to European health surveillance and research (Köhler, 2017). Indicators, based on measurements of child and young people's health and well-being , including comparable indicators across countries, play a particularly important role to identifying progress, problems and priorities over time, stimulates research and drives investment (Rigby et al., 2003, Bradshaw et al., 2006; Wolfe, 2014).

Current EU multi-dimensional approaches to measuring and monitoring children and young people's health and well-being can be criticized for under-representing the needs of the young (Rigby, 2009; Rigby et al., 2002). There is an inability to compare children and young people's health and well-being across Europe in a standard and valid way. Lack of data can impact a full understanding of the health and well-being, and their determinants, in Europe's children (Alexander et al., 2015; Cattaneo et al., 2012; Köhler, 2017; Rigby et al., 2003), making it increasingly difficult to implement evidence-based policies which best meet their needs and maximise their quality of lives.

Aims: (1) Report on sources of data on children and young people's health and well-being across Europe. (2) Report on ways of making more effective use of data to examine the lives of children and young people in Europe, i.e. to establish consensus on an agreed set of indicators to measure and monitor the health and well-being of children and young people.

Methodology: Study One: Health professional questionnaire containing open and closed ended questions on health information sources and their utilisation, accessibility and data comparability. **Study Two:** Delphi Technique, including indicator selection and a three-round questionnaire containing questions on individual indicator importance, priority by ranking, and its availability.

Results: Study 1: A total of 294 health professionals responded and offered a broad perspective on the different sources of routine and research data used across Europe. Lack of data, particularly local-level data and data on children whom are members of marginalized groups, were of concern. Six key recommendations were established on how to make more effective use of current data on children and young people's health and well-being in Europe, one of which was to increase cross-European comparability. **Study Two:** A total of 94 indicators spanned across 16 domains, within 4 dimensions, were selected and presented to panellists. Consensus was reached, and a final set of 32 key indicators was identified. Of these, 21 indicators were reported as widely available. The remaining 11 were reported as not widely available, however recommended by panellists to be made mandatory for all Member States to collect.

Conclusions: The gaps in health information on European children and young people's lives should be addressed. However, despite the need for more data collection, it is also possible to make more effective use of existing data. These study results could be used to provide a basis on which an international set of children and young people's health and well-being indicators could be established and implemented for Europe. An overarching recommendation in this research was the establishment of a European Health Information System, with a responsibility to make European children, and their lives more visible.

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Overview of Thesis

"The health of the child is the power of the nation" (Mora, 1918).

For many reasons, the case for commitment to the health and well-being of children and young people, i.e. those aged zero up to and including 24 years of age, is compelling (Köhler, 1998; UNICEF Innocenti Research Centre, 2013).

This age group (0-24) was chosen to represent 'children' and 'young people' based on the United Nations (UN) definitions (UNCRC, 1989; UNDESA, 2008). The United Nations Convention on the Rights of the Child (UNCRC) defines the child as a person under 18 years of age. The definition of 'youth' can be more controversial as it varies across different societies and Member States. The UN uses the terms 'youth' and 'young people' interchangeably to represent those aged 15-24.

How European Member States measure and monitor children and young people's health and well-being, either at an international, national or sub-national level, plays a significant role to establishing evidence-based policies. Health policies aim to maintain or improve the health and well-being of populations, and it is essential that such policies are based on relevant, up-to-date and reliable data to maximize children and young people's quality of life. Two key aims formed the basis of this research (Table 1).

Table 1: *Aims and objectives of overall research*

Aim	Objective	Method
1. Report on sources of data on children and young people's health and well-being across Europe.	To explore current approaches used at European Union level to monitor the health and well-being of children and young people.	Literature Review
	To examine current challenges in health information systems to measure children and young people's health and well-being.	Literature Review
	To investigate health professionals experience and information needs on children and young people's health and well-being data.	Health Professional Questionnaire
	To identify the utilization of data sources containing children and young people's health and well-being data across Europe.	Health Professional Questionnaire
2. Report on ways of making more effective use of data to examine the lives of children and young people in Europe.	To explore recommendations for future information development to make more effective use of children and young people's health and well-being data.	Health Professional Questionnaire
	To identify possible indicators on children and young people's health and well-being which could be measured and monitored at a European-level.	Indicator Screening
	To establish consensus on an agreed set of indicators to measure and monitor the health and well-being of children and young people across Europe.	Delphi Technique

This thesis has five chapters.

The five chapters are presented accordingly; a literature review, three individual reports, with two linking narratives provided and a final discussion, including future research options.

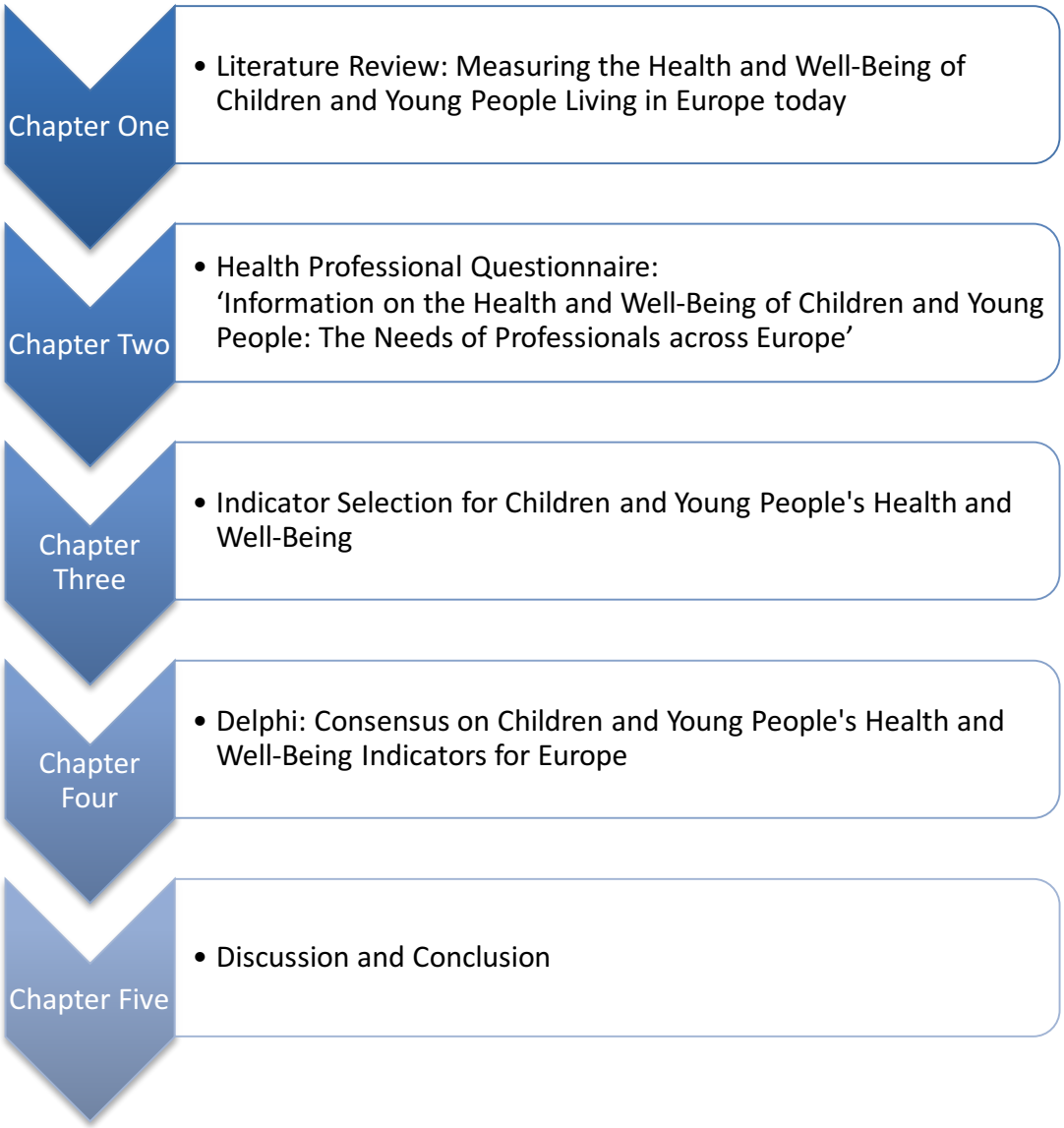

Figure 1: *General flow of thesis*

Chapter one begins with a literature review on the current approaches used to measure and monitor children and young people's health and well-being at European Union (EU)-level. There have been significant improvements in children and young people's health and well-being in the EU over the past century, however, many challenges, both old and new, remain, resulting in many children or groups of children becoming 'invisible' in health information surveillance and research (Köhler, 2017). This chapter examined health information on children and young people in Europe, i.e. the 'why' countries measure it, the current approaches on 'how' it is measured, and the existing challenges in health information systems, which act as a barrier to European future development.

A literature review aimed at understanding the information needs of health professionals found that limited access to health information of high quality that can be used in evidence-based policy decision making was a major obstacle for health professionals and policy-makers (Revere et al., 2007). A questionnaire was developed and issued to health professionals across Europe who work on data containing children and young people's health and well-being. This aimed to gain a better understanding of health professionals experience, to examine their information needs, to identify the utilization of different data sources and to explore recommendations on ways to make more effective use of data on children and young people's health and well-being. By targeting the health professionals who are directly involved and utilizing information on the lives of children and young people daily, this research gained a clear understanding of their unique information needs. More information on the questionnaire, including the results, are discussed in chapter two.

One key recommendation from the health professional questionnaire on ways to make more effective use of health information on children and young people was to increase cross-European comparability of data. One option on how this could be achieved was through the establishment of a standardized set of agreed indicators, clearly specified and routinely collected by all EU Member States, to monitor the health and well-being of children and young people. The Delphi technique was considered the best approach to conduct this research.

Chapter three aimed to identify indicators on children and young people's health and well-being which could be measured at a population-level. The list builds on from previous EU indicator databases and projects, largely guided by the CHILD (Child Health Indicator for Life Development) project as a framework. A screening process of indicators was performed and a total of 94 indicators, grouped across 16 domains within four dimensions, was used in the first round of the Delphi process.

Chapter four is a detailed report on the three-round Delphi process, including information on expert panellists, questions asked and the results for each round.

Lastly, chapter five provides a discussion and conclusion to the overall research findings and its significance.

The BRIDGE Health Project

The aims of this research formed part of a wider European Project, called BRIDGE Health, i.e. BRidging Information and Data Generation for Evidence-based Health policy and research (2017). The project was launched in May 2015 and ends in October 2017. It was funded by the European Union's Health Programme (2014-2020), coordinated by the Scientific Institute of Public Health in Belgium and included 31 partners in 16 countries, of which Dublin City University (DCU) was the only contributing institution from Ireland. BRIDGE Health, was working towards a comprehensive, integrated and sustainable European Union (EU) Health Information System (HIS) to support evidence-based health policy and research for the EU, Member States and citizens.

Since early 1990's, the European Parliament has highlighted the need for a sustainable HIS (Verschuuren et al., 2013) to provide high quality, internationally comparable, and accessible health data for the EU. Yet, still no single, integrated and sustainable EU-wide public health monitoring system or health information system exists (Bogaert and Van Oyen, 2017).

The key argument put forward by the BRIDGE project was that information and knowledge gained by measuring the health and well-being of populations, could be better managed within an EU-HIS, which in turn could fundamentally affect future health systems and health policies (BridgeHealth, 2017). Amongst other benefits, an EU-HIS would increase data sharing and knowledge, identify gaps in data, improve the quality and comparability of data, support health policy priorities and steer future research.

The project builds on existing EU projects and knowledge, by reinforcing and integrating expert and data provider networks to ensure optimal conditions for the implementation of this new HIS. The project work is organised through vertical twelve Work Packages (WP) and seven Horizontal Activities (HA).

Dublin City University, in partnership with three other institutions; the Norwegian National Institute for Public Health (NIPH, 2017), the French National Institute for Health and Medical Research (INSERM, 2017) and the Barcelona Institute for Global Health (ISGlobal, 2017), together formed Work Package 7 (WP7). It focused on

maternal, new-born, child and adolescent health. NIPH was the lead beneficiary of the work package.

Maternal, new-born, adolescent and child health covers from the perinatal period through to 24 years of age. The project brought together experts from perinatal health, health information, child health and birth cohorts to ensure a cohesive and comprehensive consideration of women (pregnancy, childbirth and postpartum), their children and young people.

INSERM were responsible for Euro-Peristat (Euro-Peristat, 2017), an EU-Project on maternal and new-born health. ISGlobal controls the CHICOS project (developing a Child Cohort Strategy for Europe) (CHICOS, 2010), which has compressed birth cohorts and their longitudinal data collection. Dublin City University contributed largely to the RICHE project (Research Inventory for Child Health in Europe) (RICHE, 2014), which has documented and collated the range of health data for children and adolescents across Europe. Furthermore, NIPM work in dual domains of stillbirth and digital health information systems.

The WP7 partners regularly reviewed my research and provided feedback. The literature review for this thesis (chapter one) was used as an introduction to the WP7 concept paper for the BRIDGE Health project. I designed, developed, implemented and analysed both empirical studies (i.e. the health professional questionnaire and the Delphi process). Further contributions from this research are described in Table 2..

Table 2: *Research contributions*

Presentation	Title	Dates	Conference
Oral	Making Children's Lives Visible – Indicators on the Health and Well-being of Children and Young People in Europe.	(upcoming) 4th November 2017	10th European Public Health Conference, Stockholm, Sweden.
Oral	Making the Lives of Children and Young People More Visible in Europe	30th June 2017	6th International Society for Child Indicators
Oral	Information on the Health and Well-being of Children and Young People: The Needs of Professionals across Europe	11th November 2016	9th European Public Health Conference, Vienna, Austria
Poster	Information on the Health and Well-being of Children and Young People: The Needs of Professionals across Europe	June 2016	Faculty of Public Health Scientific Meeting, Dublin.
Poster	Measuring the Health and Well-being of Children and Young People in Europe	December 2015	Faculty of Public Health Scientific Meeting, Dublin.

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Chapter 1: Literature Review

Measuring the Health and Well-Being of Children and Young People Living in Europe Today

Table 3: *Aims and objectives of the literature review*

Aim	Objective	Method
Report on sources of data on children and young people's health and well-being across Europe.	To explore current approaches used at European Union level to monitor the health and well-being of children and young people	Literature Review
	To examine current challenges in health information systems to measure children and young people's health and well-being	Literature Review

1.1 Introduction: Why Should We Measure the Health and Well-Being of Children and Young People?

For numerous reasons, the health and well-being of children and young people, covering from birth up to 24 years of age (UNCRC, 1989; UNDESA, 2008) is of particular importance to European public health. First and foremost, there are over 135 million people aged zero to 24 in Europe, i.e. 27% of the overall population (EuroStat, 2016). They matter substantially, both as people in themselves, and as Europe's future adults. The challenges Europe face today, such as the demographic changes due to an ageing population, can have detrimental effects to children's lives in years to come if countries continue to postpone investments and discounting the needs of the young in efforts to maintain health and pension spending on the elderly. A recent Intergenerational foundation report, Leach et al., concluded that children and young people "cannot carry the burden of an ageing population without themselves having decent jobs, wages and fair living standards" (2016, p.4).

Secondly, since 1989, it is a legal responsibility, of European Union (EU) Member States to promote, protect and fulfil the rights of every child within its borders. The United Nations Convention on the Rights of the Child (UNCRC) describes children's rights to the 'highest attainable state of health' (UNCRC, 1989). Complementary to this, the Lisbon Treaty and the EU Charter of Fundamental Rights promote these rights, and

requires that the 'best interests of the child' (Article 3) be a primary consideration in all EU action (Eurochild, 2014).

Furthermore, from a moral perspective, as they are a relatively vulnerable group in society, their health and well-being reflects the ability and willingness of society to care for its citizens (Köhler, 1998). Despite their lives being affected daily by EU policies, law-making and actions, children under the age of 18 (16 in Austria), have little to no political power. However, there have been worthwhile efforts, at a national, sub-national and EU-level, to encourage youth involvement in policy making, through the development of 40 youth parliaments across European countries (European Youth Parliament, 2017), and the development of youth engagement and participation projects, such as 'Dream Teens' (Gaspar de Matos, 2015).

Lastly, from a pragmatic perspective, it is equally deserving of priority. Ultimately, a 'flourishing economy is only built on a flourishing population' ("Joint Committee on Health and Children - Wellness, Well-Being and Mental Health," 2016). Countries have invested in collecting data for decades because it has the potential to deliver valuable societal benefits, including better-informed citizens, companies and governments (Laxminarayan and Macauley, 2012). The World Health Organization state that children and adolescents ought be provided with the necessary skills and competences to make a positive contribution, not only to their own health, but to society (World Health Organization, Europe, 2017).

There has been significant progress made in improving children and young people's health and well-being, and in the healthcare services provided for them over the previous century (Köhler, 2017). The life expectancy for a child born today is higher than ever before, whilst the average infant mortality rate in Europe continues to show a constant and remarkable decrease, from almost 28 per 1,000 live births in 1965, to 3.7 per 1,000 in 2014 (Eurostat, 2016). The latest report on Child Health in the European Union 2012 quoted "in no other part of the world children enjoy better health and life conditions than in Europe" (Cattaneo et al., 2012, p.14). Mainly thanks to the European Union, there have been rapidly decreasing differences between the northern and southern parts of Europe (Köhler, 2017), educational attainment rates have increased across all education levels, from early childhood education (OECD, 2015) to tertiary education (OECD, 2014a), and efforts have been made to prioritize

children more explicitly in global and EU policies. For example the 'Child Rights Manifesto' launched in 2013 (Eurochild, 2014), and the Sustainable Development Goals (SDGs) 2015-2030, which act as a guide to policy and action on many issues affecting the lives of children, young people and their families (UNICEF, 2016).

However, even if the general conditions for children have improved across Europe, they have not improved for all of them in the same way (Köhler, 2017), and several challenges remain which need to be properly addressed. For example, over the past two years, a growing number of migrant children have arrived in the EU, with or without their families (Voce, 2017). In 2015 and 2016, 30 percent of asylum applicants in the EU were children. This recent increase in arrivals has put Member States under pressure and exposed gaps and shortcomings for protecting migrant children (Voce, 2017).

There are inequalities in health outcomes between Europe's richer and poorer nations (Currie et al., 2012), which can be either directly, or indirectly, associated with poverty and low-economic status (Cattaneo et al., 2012). Poverty has been described as one of the greatest threats to health (Spencer et al., 2010), with a particularly profound impact on child health and well-being due to the child's high vulnerability to its consequences. After the economic recession across the continent, in 2014, young people were more likely to be at risk of poverty than the population average in 25 out of the 28 EU countries (Leach et al., 2016). Moreover, a recent EuroChild report (2013) indicated that over one in four children are living in, or at risk of poverty or social exclusion in the EU. Poverty is an important determinant of health, contributing to large inequalities in rates, within and between European countries. There are notably higher rates in marginalized groups, such as the Roma, shaping access to health care, education and good housing (Spencer et al., 2010; World Health Organization, Europe, 2014). For example, infant and child mortality rates, and increased risks of acquiring diseases, such as influenza (Bolte et al., 2010; Dostal et al., 2010), or asthma, are higher among Roma and Traveller children than in the general population (All Ireland Traveller Health Study Team, 2010; Cattaneo et al., 2012).

In summary, children and young people's health and well-being has generally improved across Europe, but more work needs to be done to maintain and hopefully improve it. Progress is possible, and evidence illustrates that population health and

well-being can be improved through relevant policy changes (Wolfe, 2014). Therefore, future EU public health policies should be evidence-based (Verschuuren et al., 2013), to meet the requirements of children and young people, and maximize their quality of life, i.e. to 'make decisions based on good information' (Eurochild, 2013).

National, and sub-national level monitoring of public health is the more important task; however, international comparisons can also play a significant role. Comparable data, between points in time, and essentially, within and between Member States, can show what is achievable, stimulate research, highlight strengths and weaknesses in individual countries, (UNICEF Innocenti Research Centre, 2013) and encourage the improvement of national health systems (Verschuuren et al., 2013). Member States can learn from one another, especially at a time when Europe is facing increasingly common health challenges (BridgeHealth, 2017). There is a substantial burden of preventable illness in European children (Cattaneo et al., 2012) which will have relative effects on the future health of Europe, through increased rates of cardiovascular disease, stroke, and premature death (Branca et al., 2007). For example, currently, one in three children aged 6-9 are overweight or obese in Europe, and research suggests that over 60% of children who are overweight before puberty will be overweight in early adulthood (World Health Organization, Europe, 2017). Comparable data can play a part to combat this, as useful insights can be gained through the comparison of different adaptations of child health services, especially when some countries have better outcomes or have made more progress (Wolfe et al., 2013).

Another example which highlights the impact of comparable health information is Euro-Peristat, an EU-Project on maternal and new-born health (Zeitlin et al., 2003b). It relies on cross-country networks to report on indicators from national routine systems for Europe. It has generated multiple debates in Europe about care provision to mothers and children, with European countries increasingly relying on the reference list of indicators to evaluate their policy initiatives and benchmark their performance.

1.2 What is being done at EU-Level at the moment?

Due to the complexity and the abstract nature of health, debate will probably always continue to what measurements would best describe it (McDowell, 2006). Nonetheless, there is wide agreement that population health and well-being are

inherently multi-dimensional and thus, a range of factors affecting one's quality of life, such as educational well-being, sense of belonging and physical health, need to be considered (Clouder et al., 2010). The EU approach to monitoring public health is multi-dimensional, which has been endorsed by setting the main determinants within each other and highlighting interrelationships between the different aspects (Dahlgren and Whitehead, 1991).

This is largely because health and well-being are inextricably linked (Rigby, 2009), thus, it can be difficult to distinguish the factors that are part of health and well-being, and the factors that influence it. One cannot have full well-being without good health, whilst the probability of good health is jeopardized if other aspects of well-being are poor. It can be difficult to distinguish health and well-being factors, as achieving a positive outcome in one area is likely to have further benefits for other areas (Department of Health Ireland, 2016). For example, improving public spaces and playgrounds can enhance participation and physical activity, which in turn could improve mental health, and subjective well-being. In addition, moving from education to employment is a very important transition in the life of young people (OECD, 2014b). The current economic situation, institutional arrangements in the education system and the labour market can all act as barriers to a smooth transition, and should be therefore tracked.

For these reasons, when monitoring health and well-being, it is essential to include a broad range of factors related to the person and their social and environmental context, both contemporaneously and throughout the life course, including objective and subjective measures of multiple life domains, all of which are likely to influence each other in complex ways (Stiglitz et al., 2009). It is argued that a multi-dimensional approach to monitoring their health which incorporates economic, social, and family policy, should be recognized, and equally seen as a crucial component to protecting children's lives (Wolfe, 2014).

The difference in health and social systems across Europe is significant (Rigby et al., 2002). However, an overview of initiatives across OECD countries found that most national approaches to measuring children's health and well-being take into account the complexity of children's lives and relationships, and do consider the situation of children in their double roles as independent members of society, as well as their

dependency on their family and society (Bradshaw et al., 2006). However, the number and type of dimensions to include, how many indicators in each dimension and their placements vary among researchers and policymakers (Köhler, 2016). As of yet, there is no consensus on agreed indicators to monitor or measure child and young people's health and well-being across Europe, and therefore, health professionals are not able to adequately compare said data in a standard or valid way (Bradshaw et al., 2006, Cattaneo et al., 2012). For example, in Ireland, the Irish National Children's Office uses a set of 42 well-being indicators (DCYA, 2005), whereas the UK Government, in a similar society, with a shared culture, developed the 'Every Child Matters' outcomes framework, which includes 25 indicators (Bradshaw et al., 2006).

The main initiative identified was the development, maintenance and implementation, of the first set of 88 common European Community Health Indicators (ECHIs) (European Commission, 2016), a core action of the European Commission's Health Programmes since 1991 (Kramers, 2003). European Member States have been involved in all the development steps involved in setting up a comprehensive data collection exercise, and they increasingly use the shortlist for their own health information strategies. By mid-2012, half of the countries integrated the ECHI indicators in their national health information systems (Verschuuren et al., 2013). Currently, there are nearly 60 health indicators for which data is readily available and reasonably comparable. Some figures, where appropriate, can be stratified by sex, age, socio-economic status and region. However, despite the usefulness of the current set of indicators, they can be criticized for being mainly based from an adult viewpoint of health (Rigby et al., 2003), in which children are seriously under-represented (Rigby, 2009).

An initiative more specific to children was the CHILD (Child Health Indicators of Life and Development) project (Rigby et al., 2003), which was appointed to determine a holistic set of indicators to measure the health and well-being of children (aged 0-17) across Europe (Rigby et al., 2003). The CHILD project is the only study, to date, which has distinctly focused on the best interests of the children, in terms of measuring for their health and well-being. This is a more difficult approach than the traditional approach, for example that of ECHI, yet should have a much greater impact upon child health itself. The philosophy behind the project was formed from the ideology of child

public health, and health for all, i.e. to place the health of children and their families in their full social, economic and political context (Köhler, 1998). The CHILD project team strongly believed that data gathered on children and young people's health and well-being should be practical and relevant, and include knowledge and experience from many professions and sciences, to address all aspects of their lives, balancing positive and negative aspects. A systematic approach was used, guided by the ECHI category framework, which identified 38 core desirable national indicators, and 17 key child health topics, which they advised required further research to identify and validate appropriate indicators (Rigby et al., 2003).

Since the CHILD indicator set creation and publication in 2003 (Rigby, 2009), the indicator set created wider interest and use. For example, it was used by the World Health Organisation's Regional Office for Europe in preparing the 2005 triennial European Health Report (World Health Organization, EUROPE, 2005). However, the indicator set has had little impact on the ECHIM programme (Kramers, 2003).

The CHILD project is not the only European project to produce health and well-being indicator sets relating to children. Other important and complementary initiatives include EURO- PERISTAT, which addresses the period of pregnancy to the first week of life (Zeitlin et al., 2003a, Zeitlin et al., 2003b), a joint action-orientated European initiative, CEHAPE (Children's Environment and Health Action Plan for Europe) (World Health Organization, Europe, 2004), the Child Safety Action Plans Project of the Child Safety Alliance (European Child Safety Alliance, 2017), and the Health Behaviour in School-aged Children study (HBSC, 2016). More information on these projects can be found in Table 4.

Table 4: *Examples of European projects/initiatives to produce health and well-being indicator sets relating to children*

Project/Study (launch Year)	Key Characteristics
Children's Environment and Health Action Plan for Europe (CEHAPE) (2004)	CEHAPE was launched in June 2004. The Health and Environment Alliance (HEAL) was responsible for its launch. It is closely linked to the World Health Organization initiative that is helping to make environmental conditions better for children. A total of 53 national governments have committed themselves to supporting four priorities set out in the plan. The role of non-governmental groups within countries are also included. A set of 18 environmental and health indicators was developed to be integrated into the EU Environment and Health Action Plan 2004-2010, to monitor current policies and actions for CEHAPE and the European Environment and Health Strategy.
Child Health Indicators of Life and Development (CHILD) Project (2003)	The CHILD Project was a third-wave project in the European Union Community Health Monitoring Programme, a comprehensive programme to develop and implement a set of national-level indicators. It was population group-specific project (i.e. one week of age to 17 years old). A systematic approach was used in identifying valid indicators, and in assembling a balanced composite list. The project's final report identified 38 core desirable national indicators, and 17 key child health topics on which further research work was needed.
Child Safety Action Plans Project of the Child Safety Alliance (2000) - TACTICS	The European Child Safety Alliance was launched in 2000 with the ambition to make the lives of children living in Europe safer. One of the Alliances' initiatives was the development of Tools to Address Childhood Trauma, Injury and Children's Safety (TACTICS). TACTICS (2011-2014) built on the successful work of past EC funded projects such as the Child Safety Action Plan (CSAP) (2004-2010). Three sets of Child Safety Report Cards were released, the most recent, 2012, under the auspices of TACTICS. They provide indicators for benchmarking and evaluation, including policies covering a total of 13 areas. Several additional indicators were added to the 2012 assessments to address additional policies areas not addressed in the 2009 assessments. TACTICS developed a Child Safety Index and Toolkit to monitor progress in child safety. Profiles in over 30 countries exist, including all 27 EU Member States.
European Core Health Indicators (ECHI) (2012)	The ECHI, formally known as the European Community Health Indicators, are the result of a long-term cooperation between the EU Member States and the European Commission, with an aim to create a comparable health information system to monitor EU public health. The Joint Action on European Community Health Indicators Monitoring (ECHIM) built on previous achievements and continued the implementation of the health

	indicators (a shortlist of 88 classified by policy areas) in the Member States in 2012. An ECHI data tool exists.
EURO-PERISTAT (1999)	EURO-PERISTAT is coordinated by Inserm, the French National Institute of Health and Medical Research, in Paris. The project receives funding from the European Commission Directorate for Health and Food Safety. Its aim is to establish a high quality European perinatal information system. A list of recommended indicators grouped into four themes for perinatal health surveillance was developed. The European Perinatal Health Report 2010 includes comparable data on 30 perinatal health indicators from 29 European countries.
Health Behaviour in School-aged Children (HBSC) study (1983)	The HBSC study is a cross-national survey on 11-, 13- and 15-year-old school student boys' and girls' health and well-being, social environments and health behaviours. It collects data every four years. The WHO Regional Office for Europe adopted the HBSC as a collaborative study with currently 47 countries and regions across Europe and North America involved. The international standard questionnaire produced for every survey cycle enables the collection of common data across all participating countries and thus enables the quantification of patterns of key health behaviours, health indicators and contextual variables. These data collected via international standard questionnaires allows for the quantification of patterns of health indicators, and cross-national comparisons to be made.

1.3 Current Challenges in Health Information Systems

There is a “shortage of actual, continuous, relevant and reliable data on important aspects of health and well-being of children” (Köhler, 2017, p.3). Current health information systems differ significantly across Europe (Rigby et al., 2002), and as of yet, there is no coherent health information strategy available (Kilpeläinen et al., 2012). Consequently, there are many overlaps in data, information is widely dispersed, there are enormous gaps in information (Brennan and Blair, 2011) and it can be difficult to identify and filter the most useful and accurate data (Hartzband and Groopman, 2010).

As mentioned, there are valuable EU projects contributing to the increasing knowledge of children and young people’s health and well-being in Europe. For example, the Child Health Indicators for Life Development project (Rigby et al., 2002), and the Research Inventory for Child Health Europe (RICHE, 2014). RICHE was a EU Seventh Framework Programme funded project which finished in 2014. It was tasked with preparing a roadmap for the future of child health research across Europe. However, many of

these credible projects have been funded on an ad-hoc project basis, resulting in a scattered and unsustainable health information situation for Europe (Verschuuren et al., 2013).

Timeliness of data is a key issue when making international comparisons. Between the collection of data in a wide variety of different settings and their publication in quality-controlled, internationally comparable form, the delay is typically two to three years. This means that most of the statistics on children's health and well-being, though based on the latest available data, apply to a much earlier period (UNICEF Innocenti Research Centre, 2013).

Large differences can be found within and between Member States in both the quality and availability of data on children and young people's lives, i.e. there are in all countries, groups of the childhood population we know less about (Köhler, 2017). They can often be invisible within national health policies and strategies. For example, Rigby et al., (2017) found that only eleven of 27 countries mention children and adolescents in their national e-health strategy document. These findings represent a potentially serious gap to supporting children and young people needs, and do not accord with the 'societal and health system duty of care to children' (Rigby et al., 2017, p.62). Data on children and young people amongst the most marginalized groups, such as, immigrants, people in insecure accommodation or homelessness, refugees and the Roma population, is often inaccessible or non-existent (Dar et al., 2013; Peters et al., 2009).

While it is widely believed that the health of Roma people is often poorer than the majority population, these inequalities remain largely un-researched. For example, published research on the health needs of the Roma population is sparse, with some 70% of papers identified related to just three countries in Europe; Spain and the Czech and Slovak Republics (Hajioff and McKee, 2000).

This has an impact on overall 'national' figures, and can cumulatively effect international comparability. This limitation is often well understood by experts, that within the 'national average' figures, there can be great variation between regions, and individual population groups, due to health information inequalities. However, this understanding may not be shared with the general population, nor with politicians and other senior decision makers. For example, on average, 93% of young people are said

to finish secondary education in Ireland (OECD, 2015). These positive figures often exclude the Travelling community, a minority group, where the majority of children still leave school before completing the junior cycle (Central Statistics Office Ireland, 2012).

Once this limitation to routine data is understood, further research can be taken to include minority groups by collecting data, to gain a more accurate representation of overall population health. For example, a large-scale study was undertaken in Ireland which examined the health status of Travellers, assessed the impact of the health services provided to them and identified the factors which influenced mortality and morbidity rates, called the All Ireland Traveller Health Study (AITHS).

The study provided a framework for policy development and practice to address the needs of the Travelling community in Ireland. In relation to the high drop-out rates experienced by children whom are members of the Travelling community in school, the report recommended the need to meaningfully engage with parents of Traveller children, in particular through community development and relationship building with the educational providers (All Ireland Traveller Health Study Team, 2010).

1.4 Discussion and Conclusion

Changes are occurring with incomes rising across Europe, urbanization increases, and there's an epidemiological shift in the causes of mortality to more non-communicable diseases (WHO, 2009). Children and young people are especially vulnerable to the effects of poverty, migration (both legal and illegal) and economic downturns. For numerous reasons, the European Union Member States have responsibility to promote, protect and fulfil the rights of every child within its borders.

There are reciprocal challenges in health information, such as health information inequalities, which persists to act a barrier to adequately monitoring and comparing the health and well-being of children and young people across the EU. Köhler explained that even if the general conditions for children have improved over the past century, they have not improved for all children in the same way; and "too many children and groups of children are still invisible" in health surveillance and research. (2017, p.3).

Access to convenient, comparable and usable information that is known to be

regularly updated (Hall et al., 2003; O'Carroll et al., 1998), is essential for health professionals when developing evidence-based essential policies aimed to maintain and hopefully improve the health of citizens (Verschuuren et al., 2013). A report published in Sweden in the early 1990's, stated the need for a health surveillance system that contains complete, systematic and continuous surveillance of children and young people's health and well-being, seen from a child perspective and placed in a social context (Köhler and Jakobsson, 1991). This conclusion is still valid today, and for all of Europe.

There have been efforts made at EU-level to develop a European Health Information System. For example, BRIDGE Health's vision is a comprehensive, integrated and sustainable EU health information system (HIS) for health professionals, policy-makers, Member States and its citizens (BridgeHealth, 2017). Such a system would benefit EU health policy at large through stronger co-operation and better exchange of knowledge and expertise between all populations.

In line with this aim, there have been efforts to increase cross-border comparisons on population-level data, primarily via the establishment of the ECHIs (European Commission, 2016). However, despite their usefulness, they can be criticised from being mainly viewed from an adult or household viewpoint, and largely underrepresent children's health and well-being (Rigby, 2009). As of yet, notwithstanding the CHILD project (Rigby et al., 2002), there has been limited work on how best to specifically measure and monitor children's health and well-being at an EU-level.

In summary, this review found useful and valuable data on children and young people available. but recognized the need to make them comparable, reliable, up-to-date and usable by policy makers, managers, and front-line staff. Subsequently, lack of such data impedes a full understanding of European children's health and well-being (Alexander et al., 2015; Cattaneo et al., 2012; Köhler, 2017; Rigby et al., 2003), making it increasingly difficult to implement evidence-based policies which best meet their needs. It is EU Member States duty to make the lives of children and young people 'visible' in health information systems.

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Chapter 2: Health Professional Questionnaire

Information on the Health and Well-Being of Children and Young People: The Needs of Professionals across Europe

Table 5: *Aims and objectives of the health professional questionnaire*

Aim	Objective	Method
Report on sources of data on child and young people's health and well-being across Europe.	To investigate health professionals experience and information needs on children and young people's health and well-being data	Health Professional Questionnaire
	To identify the utilization of data sources containing children and young people's health and well-being data across Europe	Health Professional Questionnaire
Report on ways of making more effective use of data to examine the lives of children and young people in Europe.	To explore recommendations for future information development to make more effective use of children and young people's health and well-being data.	Health Professional Questionnaire

2.1 Abstract

Background: Limited access to required information is a major obstacle for health professionals (Revere et al., 2007), and can act as a barrier to implementing evidence-based policies (Dobbins et al., 2009). Over the past century, children's health has generally improved across Europe. However, health inequalities remain a challenge for all countries. There are many credible data sources, both routine and research, containing health information on children and young people. Despite more work needed, more could be done with the existing knowledge (Köhler, 2017).

Aim: Investigate health professionals experiences of data on child and young people's health and well-being, identify the utilization of data sources used by health professionals across Europe and explore their recommendations for future information development to make more effective use of data.

Method: An online questionnaire containing open-ended and closed-ended questions. Invitation to participate via email.

Results: Drawing on data from 294 health professionals across Europe, this study offered a broad perspective on the different routine data and research data sources used. Most health professionals (68%) use both data sources. Lack of access to data at local-level, and children whom are part of marginalized groups were of major concern. Recommendations on how to make more effective use of current data included: reduced information overload and increased data harmonization; create centralized access and improved delivery; improved authorization for access to information; improved timelines and quality of information; improved information technology and increased awareness of the importance of children and young people's health and well-being; and increased cross-European comparability.

Conclusion: Health professionals need access to convenient, timely, up-to-date, reliable, and comparable information on the health and well-being of children and young people. The recommendations provided in this report signpost the need for future action on making more effective use of current health data.

2.2 Introduction

One common finding in all European studies, was a “shortage of actual, continuous, relevant and reliable data on important aspects of health and well-being of children” (Köhler, 2017, p.3). Lack of relevant, up-to-date and reliable data hampers a full understanding of the health and well-being of children and young people in Europe (Alexander et al., 2015; Cattaneo et al., 2012; Köhler, 2017; Rigby et al., 2003).

For many reasons, the case for commitment to the health and well-being of children and young people, i.e. those aged zero up to and including 24 years of age, (UNDESA, 2008) is significant to European public health (Köhler, 1998). To fulfil that commitment, relevant data must be collected and applied to future health policies to ensure that they meet the needs of children and young people across Europe to maximize their quality of life (UNICEF Innocenti Research Centre, 2013).

Generally, the health and well-being of children in Europe has improved over the past century, whilst knowledge about children’s development, i.e. physical, mental and social, is expanding (Köhler, 2017). Many EU projects, focusing on specific aspects of children’s health and well-being, has contributed significantly to this increase of data, such as CHICOS (Developing a Child Cohort Research Strategy for Europe) (CHICOS, 2010), the Health Behaviour School-Aged Children (HBSC, 2016), EURO-PERISTAT (Perinatal information system), RICHE (Staines and Rigby, 2014) and TACTICS (Tools to Address Childhood Trauma, Injury and Children’s Safety) (TACTICS, 2014).

However, despite the vast improvements in health information, “too many children and groups of children are still invisible” in health surveillance and research (p.3) (Köhler, 2017). Data availability and health information inequalities remain a huge issue in Europe, across all countries. Data on children whom are members of marginalized groups, such as Irish Travellers, Roma population, or migrants, are everywhere much more difficult to find.

Moreover, a recent study aimed at developing a reliable Child Safety Index for use at the local level, concluded that there is a worrying lack of data available at the local level to enable informed policy making (Alexander et al., 2015).

Public health policies aim to improve and maintain the health of populations (Verschuuren et al., 2013). However, policymakers can only respond effectively to

population, and health systems' challenges, if they have the appropriate tools and knowledge (Bogaert and Van Oyen, 2017). Limited data can hardly provide a sound basis for more extensive public health policies, making it increasingly difficult for health professionals and policy-makers to carry out their work effectively (Dobbins et al., 2009; Twose et al., 2008).

Revere et al., (2007) in their literature review identified the barriers to accessing such data, including information overload, fragmentation of databases, resource reliability and timeliness of data. 'The hardest task now is to actually locate the information required from the flood of information received' (Davies, 2007). The large number of data sources containing information on children and young people's health and well-being, including electronic journal articles, newsletters, websites, can make it difficult to identify accurate, useful and credible data (Hartzband and Groopman, 2010; Zwaanswijk et al., 2011). Moreover, fragmented databases leads to much 'time-consuming- searches for health professionals (Twose et al., 2008).

It is understood that more data on children's health and well-being must be collected, but as Köhler concluded, "we can also start doing something with the knowledge we already have" (2017, p.7).

2.3 Aim

This research aimed to investigate the experiences of health professionals with data on child and young people's health and well-being, identify the utilization of data sources used by health professionals across Europe and explore their recommendations for future information development to make more effective use of data. To the research team's knowledge, there has been no previous study conducted which focused on this task and age group (0 to 24) across Europe.

2.4 Methodology

Study Design

An online questionnaire containing a mixture of open-ended and closed-ended questions, was distributed to health professionals who work with children and young people's health and well-being. The questionnaire was anonymous. A copy of the questionnaire can be found in Appendix A. Participants were offered the opportunity at the end of the questionnaire to include their emails for any subsequent studies.

Ethical approval

Ethical approval was granted for this research by Dublin City University Research Ethics Committee (DCUREC/2015/229) (Appendix B).

Administration

An online questionnaire was the most feasible and appropriate tool (Robson, 2002) for us to use as our participants were dispersed in various locations across Europe. The short questions, simplicity, and ease of access to the questionnaire, all contributed to a higher response rate and a wider range of participants.

The questionnaire was distributed using an online platform, Survey Monkey. The link to the survey was attached to an email explaining the purpose of the study and a request to share the survey with their colleagues who work with children and young people's health and well-being. The email requesting health professionals to complete the survey was distributed amongst our child health research networks, including the Research Inventory for Child Health in Europe (RICHE, 2014) team, the **BR**idging **I**nformation and **D**ata **G**eneration for **E**vidence-based **H**ealth policy and research (BRIDGE Health, 2017) health project team. Health professionals were given a month to complete the survey, with two reminder emails.

The survey included questions on information sources, availability, comparability and accessibility. For simplicity, we divided the information sources into two types; Routine data, i.e. administrative data already collected by state or private agencies, for example census data, vaccination rates, health service data, birth and death records and hospital admission data.

Secondly, research data, which includes studies published in journals, self-reported health questionnaires, national surveys and longitudinal studies. Examples of research data were the Health-Behaviour in School Aged Study (HBSC, 2016), Growing Up in Ireland (GUI) Study and the CHICOS project (Developing a Child Cohort Research Strategy for Europe) (CHICOS, 2010).

Health professionals were a multi-disciplinary group of health professionals who work with information on the health and well-being of children and young people. Recruitment of participants was sent via email to child and young people's health networks, colleagues and associates across Europe. We shared the email with our

BRIDGE Health network, child health colleagues, EUPHA members, RICHE network, and requested that participants share the invitation amongst their own colleagues and networks.

Analysis

Survey Monkey software allowed direct import for data analysis. SPSS (Statistical Program for the Social Sciences) version 24 (IBM SPSS Statistics, 2017) and R version 3.3.0 was used for quantitative analysis (R Core Team, 2016).

The responses to the open-ended questions were imported into Microsoft Word, and thematic analysis was conducted. In summary, this involved searching across the range of texts, to find repeated patterns of meaning (Braun and Clarke, 2006).

A systematic approach was used through the entire data set, giving full and equal attention to each data item. Initial codes were identified manually, by using highlighters and coloured pens, which formed the basis of repeated themes. An overall representation of the data themes was produced and the assembling of themes and sub-themes occurred through refinement (Braun and Clarke, 2006).

2.5 Results

Participant Information

There was a total of 294 respondents from 37 countries.

Table 6: *Participants' information ranked by country, occupation and organisation (total percentage %, total number)*

Country	Total % (n)	Occupation	Total % (n)	Organisation	Total % (n)
Ireland	27% (79)	Researcher	48% (136)	University/Third Level	38% (108)
United Kingdom	10% (29)	Clinician	28% (81)	National Government	25% (71)
Italy	7% (21)	Other**	24% (68)	Health Care Provider	16% (45)
Germany	6.5% (19)			Regional Government	6% (18)
Malta	5.5% (17)			Voluntary Organisation	4.5% (13)
Belgium	4% (12)			Other***	10.5% (30)
Netherlands	4% (12)				
Other*	36% (105)				

Other* includes Portugal, Sweden, Romania, France, Lithuania, Austria, Croatia, Denmark, Georgia, Iceland, Slovakia, Bulgaria, Estonia, Slovenia, Spain, Switzerland, Finland, Kosovo, Poland, Turkey, Andorra, Bosnia and Herzegovina, Cyprus, Greece, Israel, Norway, Serbia, Vatican City (Holy See) and 'Outside Europe'.
Other** includes project managers, health policy advisors, health promotion officers, advocates, and educators
Other*** includes research projects, private practice, media and international organisations

Each participant did not respond to each item of the questionnaire. Therefore, the results presented below were based on the number of respondents to the individual question rather than on the overall sample of 294 participants.

Quantitative content analysis

Full quantitative content analysis can be found below (Table 7). Most health professionals (68%, n=132) used both information sources (i.e. routine and research data) to access information on children and young people's health and well-being in their day-to-day work, with a slightly higher number of health professionals only using research data. The majority (56%, n=133) of health professionals responded having access to a local, regional or national database (or any similar health information system) specific to children and young people's health and well-being. Of these, 65%

provided national data, and only 12.5% local data.

The commonest route to accessing information was through freely available online sources (34%). Only 40% (n=61) of respondents reported having ‘easy’ access to the information they needed. Only a small portion (14%, n=22) of health professionals could get access to information on the health and well-being of children and young people who are members of marginalized groups.

Table 7: *Quantitative content analysis of the Health Professional Questionnaire on health and well-being information of children and young people (total percentage %, total number)*

Health Information System/Database				Information Availability		Accessing Information				Information Sources	
Access to information	**Total % (n)**	**Level of data provided**	**Total % (n)**	**Routes**	**Total % (n)**	**Ease of Access**	**Total % (n)**	**Information on Marginalized Groups**	**Total % (n)**	**Health Information Sources**	**Total % (n)**
Yes	57% (131)	National	65% (78)	Freely Online	34% (119)	Yes	40% (61)	Yes	14% (22)	Only use Routine Data	8% (15)
		Regional	17.5%(21)	On request through your work	21% (75)	No	10% (16)	No	26% (40)	Only use Research Data	20% (40)
		Local	12.5% (15)	Library Access	20% (71)	It depends on the information	50% (77)	Partial	40% (60)	Use Both	68% (132)
		Do not know	5% (6)	Hard Copies/ Paper	13% (46)			Do not know	20% (30)	Use Neither	4% (8)
No	20% (47)			E-Health Records	11% (39)						
Do not know	23% (53)										

Qualitative content analysis

Routine Data

Data on vaccinations and immunization was the most common type of routine data used by health professionals, followed by demographic data, education and health services data. Respondents primarily used national databases to source this information.

Research Data

Health behaviour data, including nutrition, overweight and obesity, physical activity, tobacco, drugs and alcohol use, was the predominant type of research data used by respondents. Other types of data included cohort data, data on marginalized groups, maternal data and education. A mix of national, regional and local sources were reported as the most common source to access this data, followed by journal subscriptions and personal access via networks or colleagues.

Within both information sources, health service data (e.g. information accessed via GP records, hospital admission rates), health systems performance data (e.g. information on health systems quality, costs, accessibility, etc.), and educational data, were reported as types of information health professionals would like to have access to.

Information Sources

Health professionals listed various information resources they access to meet their information needs. This information could be used to compare data within their representative country, or with that from other countries. Responses varied from specific databases, such as the HBSC (Health Behaviour School-aged Children), newsletters, online libraries, health records, public health institutes to more international sources, such as Eurostat, the OECD, ECDC and the World Health Organisation. Fellow workers and peers were also noted as a source for information.

Meeting the Information Needs of Health Professionals and Making More Effective Use of Information Sources

Table 8: *Six key recommendations on how to make more effective use of data on children and young people's health and well-being in Europe*

Themed Recommendation	Sub-Theme	Quote
1. Reduce Information Overload and Increase Data Harmonization	Reduce overwhelming amount of data sources	*"we have access to a lot of information sources – often causing as much confusion as resources"*
	Increase data linkage	*"possibility to pool existing data sets for deeper analyses"*
2. Create Centralized Access and Improve Delivery	Improve EU Information structures by creating one single source of information	*"Develop an international data source that can be accessed online and is updated regularly"* *"An up-to-date child health website with local, national and international data would be very useful"*
	Simplify information retrieval/search and transfer	"*sometimes it is obvious that the data must exist, but difficult to find the most appropriate ones"*
3. Improve Authorisation for Access to Information	Reduce Barriers: Privacy protection laws, legal frameworks and governance	*"It depends on the country of information that I require. Some European countries are easier to obtain data than others due to privacy laws"*
	Increase access to individual level data or microdata	*"aggregated or contextual information is usually easy to access. Individual data require complex and tedious procedures in a case-by-case basis"*
	Reduce/remove subscription fees	*"scientific literature cannot always be accessed free of charge, which hampers my work"*
4. Improve Timeliness and Quality of Information	Improve quality and 'completeness' of datasets	*"Data quality is the issue. Takes huge amount of time to clean and harmonize records"*
	Improve timeliness	*"More timely information – sometimes it takes a while for the information to be available"*

	Improve information on marginalized groups	*"mainly it is small scale surveys of limited value"* *"demographic data but not health related data except by special study/research"*
	Increase data collection	*"sources on data from local policy, like for ROMA or migrants"*
5. Improve Information Technology and Increase Awareness	Improve data accessibility via PC-based documentation (i.e. non-handwritten) and ensure internet access	*"change from handwritten information to PC-based documentation* *""poor internet access"*
	Establish user friendly websites	*"the complexity of the websites"*
	Increase awareness of children and young people's health and well-being through: a) Political support	*"developing political will for investment in children; understanding the critical importance of investment on long-term outcomes, especially health, wellness, and the ability to participate in a national economy"*
	b) Youth engagement	*"Have children as representatives on local, national and European councils – Always include the voice of the child in policy and more importantly in practice"*
	c) More research dissemination – media, journals, seminars	*"raise public consciousness of importance of child health"*
6. Increase Cross-European Comparability	Increase cross-border collaboration for greater comparisons	*More "collaborative cross-European reports, international research projects"*
	Greater use of similar methodology procedures, monitoring and reporting	*"coherent definitions for health indicators and similar ways to measure them. This would avoid mistrust in the data and avoid the extra work of finding out how data are actually measured and how valid they are"*
	A defined set of agreed indicators	*"We require a defined suite of universally agreed key performance indicators for comparisons between groups/regions/countries"*

Respondents provided suggestions on how to make information sources more effective and make the lives of children and young people more visible. The responses were grouped into six common themes (Table 8). These addressed the main barriers to accessing information and subsequently, identified the information needs of health professionals.

The first identified theme was to reduce information overload and to increase data harmonization between databases. Health professionals described that at times, despite the overwhelming amount of information available, retrieving the information sought from different sources can be a challenge.

Secondly, a centralized access point of information, along with improved delivery of information was identified as a key recommendation by health professionals. It was noted that much time was spent contacting colleagues, and personally transferring data to health professionals in other regions and Member States. Information should be made more accessible, for example via a portal to information and resources. This would enable easier sharing and transfer of information and maximize co-ordination within and between Member States.

Thirdly, to improve health professionals' authorisation to access health information. Privacy protection laws, legal frameworks and governance concerning data authorization act as barriers to freely accessing information. This was more of an issue to health professionals trying to gain access to individual level data, or microdata. Legislation should be established and agreed upon ensuring free, easy and secure access to information within and between Member States. Subscription fees, for example for journal articles, were also identified as a barrier to accessing health information.

Fourthly, the need to improve data timeliness and its quality was identified as a key recommendation amongst health professionals. It was found that many databases containing information on the health and well-being of children and young people can be incomplete, of poor quality and outdated. Notably, the poor quality, difficulties to access, and lack of information available on children and young people whom are members of marginalized groups were of major concern.

The fifth theme identified was the need to improve information technology (I.T.) and to increase awareness of the importance of children and young people's health and

well-being. Inadequate I.T. infrastructure remains a challenge for many European Member States today which has an impact on data availability, for example, the use of non-computerized health records. Increased awareness could be achieved through an increase in political will and support, youth engagement and more research dissemination via different sources, such as the media, journals, newsletters, charity days, and public education seminars.

Finally, the sixth theme was to increase cross-European comparability of data on children and young people's health and well-being information. An agreed consensus of indicators to measure and monitor the health and well-being of children and young people across Member States, similar methodological procedures, and set reporting of data would increase data comparability.

2.6 Strengths and Limitations

Health professionals (n=294) from 37 different countries, offered an additional perspective to the information needed on child and young people's health and well-being. There were few formal studies of information needs and information-seeking behaviours of health professionals reported, let alone, those specific to the health and well-being of children and young people (aged 0-24).

Self-administered questionnaires standardize the data collection procedure in a way that is essentially impossible to do when using semi-structured interviews or focus groups (Robson, 2002).

The results provided valuable insights into the shared needs, opinions, and challenges, experienced by health professionals across Europe today. In particular, the spontaneous use of common terms provided compelling evidence of the culturally shared understandings of the health information issues under child and young people's health and well-being. This research supported much of the existing literature, including that of (Revere et al., 2007) on understanding the information needs of health professionals.

The online questionnaire was distributed to an unrepresentative sample of health professionals, i.e. we are unable to provide a definite response rate. Despite it being a European study, due to limited resources, the questionnaire could only be made available in English, thus, many health professionals were unable to participate.

Lastly, due to the diverse professionals' roles within the health field, such as clinicians and policy makers, it is likely that their 'information needs' differ significantly and the results produced by this research may not reflect the views of all health professionals.

2.7 Discussion and Conclusion

The questionnaire findings suggested that a vast amount of health professionals (68%, n=132) used both routine data and research data in their day-to-day work. Gaps in health information was identified. Only a small portion (14%, n=22) of health professionals reported access to data on children whom are members of marginalized groups, such as Roma or Irish Travellers. There was very little to no routine data available, and data was reported as difficult to gain access to, was usually very specific, and was often low in quality (i.e. unreliable, outdated or incomplete). This adds to the growing evidence that health information inequalities are a major challenge in Europe, across all countries (Köhler, 2017).

From the databases (or any similar health information system) specific to children and young people's health and well-being discussed, 65% provided national data, and only 12.5% local data. This supports previous literature, that there is a worrying lack of data available at the local level to enable informed policy making (Alexander et al., 2015).

The key findings from the questionnaire were the recommendations for future information development to make more effective use of data on children and young people's health and well-being. These included: reduced information overload and increase data harmonization; create centralized access and improve delivery; improve authorization for access to information; improve timelines and quality of information; improve information technology and increase awareness of children and young people's health and well-being; and increase cross-European comparability.

Future Research

"Generally, it is more difficult to access information than one would hope". Only 40% (n=61) of respondents reported having 'easy' access to the information they needed. Professionals require an easier way to access information, that is reliable, valid, comparable and regularly updated. The improved delivery of information could be achieved via a portal to information and resources, such as a European Child Health Observatory. This would enable easier sharing and transfer of information and

maximize co-ordination within and between Member States. Moreover, an EU-Health Information System would benefit EU health policy at large (Kilpeläinen et al., 2012).

As such, this research provides knowledge on what is needed to make health information on children and young people more effective and signposts the need for future action. The establishment of agreed legislation ensuring free, easy and secure access to information within and between Member States, increasing the awareness of the importance of children's health and well-being through more political investment and the development of a standardized set of agreed indicators, clearly specified and routinely collected by all Member States to measure and monitor children's health and wellbeing at an EU-level, all contribute to ways of making the lives of children and young people more visible in Europe.

Health policies have a direct impact on the quality of lives for children and young people in Europe. This research supports previous literature, i.e. health professionals need access to convenient, up-to-date, reliable, and comparable information (Hall et al., 2003; O'Carroll et al., 1998), to inform future health policies (Dobbins et al., 2009) to meet the requirements of children and young people across Europe, and maximize their quality of life.

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Linking Narrative 1

The health professional questionnaire (chapter two) findings produced six key recommendations on how to make more effective use of data on children and young people's health and well-being in Europe (graph below).

Figure 2: *Six key recommendations on how to make more effective use of data on children and young people's health and well-being in Europe.*

One of the key recommendations were to 'increase cross-European comparability' of data. This finding supports previous literature. To quote the most recent European Child Health report, there is an "inability to adequately describe and compare child health and well-being across Europe in a standard and valid way" (Cattaneo et al., 2012, p.14).

Examples of how this could be achieved include increasing cross-border collaborations through more European research projects, the development of standardized methodology procedures to collect and report data on children and young people's health and well-being, and the establishment an agreed set of indicators to measure and monitor the health and well-being of children and young people across Europe.

Indicators play a vital role in the identification of trends and issues and support priority setting and policy formation, whilst making comparisons of data can play a significant part to raise awareness of health and health issues, stimulate research and drive investment (UNICEF Innocenti Research Centre, 2013; Wolfe, 2014).

Undoubtedly, increasing cross-border comparability of data can be challenging. The difference in health and social systems across Europe is significant (Rigby et al., 2002). There are different methods and measures used at national, and sometimes, sub-national-level, to monitor the health and well-being of children and young people. Furthermore, the availability and timeliness of data is a huge issue. Between the collection of data in a wide variety of different settings and their publication in quality-controlled, internationally comparable form, the delay is typically two to three years. This means that most of the statistics on child and young people's health and well-being, though based on the latest available data, apply to a much earlier period (UNICEF Innocenti Research Centre, 2013).

Nonetheless, due to the benefits of international comparable data, valuable efforts have been made across Europe to increase data comparability. Examples of such efforts include, the implementation of 88 European Core Health Indicators (ECHI) (European Commission, 2016), the Child Health Indicators for Life Development (CHILD) project (Rigby et al., 2002), a perinatal health indicators project, EURO-PERISTAT (Euro-Peristat, 2017), RICHE, a repository of child health indicators for Europe (RICHE, 2014) and the Health Behaviour in School-Aged Children study (HBSC, 2016). However, the sheer number of indicators available can offer a complicated picture (Köhler, 2016), and as of yet, a standardized set of indicators to compare the health and well-being of children and young people, aged zero to 24, across Europe does not exist.

The following study aimed to build on previous EU-level work, to provide a basis on which an international set of indicators can now be developed to measure and monitor children and young people's health and well-being across Europe. The Delphi technique was used to carry out this research. The figure below describes the overall Delphi approach and timeline. There are five general phases. The following two chapters of this thesis (chapter three and four) examine the five phases in more detail.

The next chapter of this thesis, chapter three, delves into the exploration phase aimed at identifying indicators for the first round of the Delphi study.

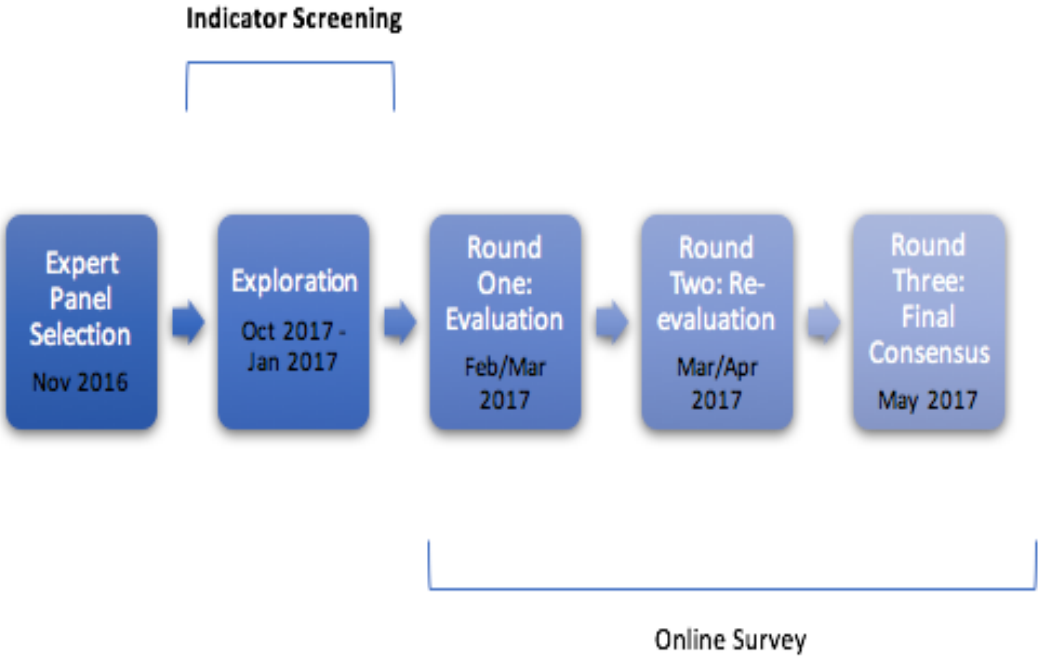

Figure 3: *The overall Delphi approach and timeline (part one)*

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Chapter 3: Indicator Selection

Indicator Selection for Child and Young People's Health and Well-Being Across Europe

Table 9: *Aim and objective for the selection of children and young people's health and well-being indicators*

Aim	Objective	Method
Report on ways of making more effective use of data to examine the lives of children and young people in Europe.	To identify possible indicators on children and young people's health and well-being which could be measured and monitored at a European-level.	Indicator Screening

3.1 Abstract

Background: Well-constructed indicators are used to measure and monitor children's health and well-being (Köhler, 2016). Indicators sets or frameworks, can make data more comprehensible and easier to use for research and policy purposes. As health and well-being are inextricably linked (Rigby, 2009), it is important that the indicator sets reflect the complexity of children's lives. Studies show that most countries adopt a multi-dimensional approach (Bradshaw et al., 2006). However, due to the varied indicator sets, and differences in health systems across Member States, as of yet, we are unable to compare or describe children and young people's health and well-being across Europe, in a standard or valid way (Cattaneo et al., 2012). Comparable health information can help inform evidence-based policies aimed to maintain or improve the health and well-being of children and young people in Europe. There have been significant and worthwhile efforts at EU-level to develop and implement comparable national-level indicators, primarily ECHI (European Core Health Indicators) and the CHILD (Child Health Indicators for Life Development) project (2003). Despite more data collection needed on children's health in Europe, more could be done with the existing knowledge and information (Köhler, 2017).

Aim: To identify possible indicators on children and young people's health and well-being, which could be measured and monitored at EU-Level, by using existing databases and knowledge.

Method: A review of current indicator specific projects was carried out focusing on that containing information on the health and well-being of children and young people, aged zero to 24. A total of 11 data sources were analysed, and an indicator screening process was undertaken.

Results: Four dimensions were developed including 16 domains (topic areas). A list of 94 indicators was established. Indicators were deemed relevant and useful to the European population, and had technical merit.

Conclusion: A multi-dimensional approach was the most favoured approach to monitoring population health and well-being. This indicator list was used in the first round of a Delphi study aimed at building consensus on an agreed set of indicators to measure and monitor children and young people's health and well-being across Europe.

3.2 Introduction

When used to their greatest potential, indicators can: 'enable societies to inform their policies, galvanise and reward effort, mark their achievement, introduce accountability and be a means by which sustained pressure can be brought to bear for the fulfilment of political promises' (Ben-Aryeh, 2001, p.7).

With this considerable potential, there is no surprise that the indicator industry is thriving in health care. The introduction of public health indicators can date as far back as the 18th and 19th centuries, with Edmond Halleys use of life-tables (1656-1742) (Halley, 1942), and Thomas Malthus (1766-1834) analysis of demographic data (Malthus and Gilbert, 2008). Since then, the development and use of indicators has remarkably advanced and improved, and has become an "integral part of planning and designing health services for the 21st century" (Klazinga et al., 2001, p.437).

Fundamentally, health care services and health systems indicators can be regarded as management tools (i.e. primarily for monitoring and evaluation purposes), in that the information gathered should be used for decision-making in policy and management cycles (Klazinga et al., 2001).

The World Health Organisation (WHO) has been an important force in promoting the use of public health-based indicators (Klazinga et al., 2001), defining an indicator as:

> "A variable with characteristics of quality, quantity and time used to measure, directly or indirectly, changes in a situation and to appreciate the progress made in addressing it" (World Health Organization, 2009).

The use of well-constructed indicators is now an established way to measure and monitor children's health and well-being (Köhler, 2016). Moreover, there is widespread agreement that one single indicator, nor a single domain of indicators, can fully represent population health and well-being. Rather, health and well-being is associated with a range of factors, including social participation, education, housing, environment, and subjective well-being, causing it to be multi-dimensional (Bradshaw et al., 2006).

The European Union (EU) multi-dimensional approach to measuring population health and well-being has been endorsed by Dahlgren and Whitehead (1991) which highlights the interrelationships between the macro, meso and micro aspects.

As a result, most indicator frameworks aimed to monitor public health include a broad range of indicators as an attempt to understand and represent the complexity and

multi-dimensional nature of people's lives (Ben-Aryeh, 2001; Bradshaw et al., 2006) . The EU and OECD (OECD, 2008) argued that:

> 'A well-designed Index can provide a comprehensive vision of a multidimensional phenomenon and allows for the setting of national benchmarks and for further international comparisons and is a starting point for analysis and discussion'.

Nevertheless, decisions on how many and which dimensions to include and emphasize, the number of indicators in each dimension and the placement of indicators per dimension vary among researchers and policymakers (Köhler, 2016). This makes it difficult for health professionals to make valid cross-border comparisons of data. Despite the increasing number of indicators available, as of yet, we are unable to compare or describe children's health and well-being across Europe in a standard or valid way (Cattaneo et al., 2012).

Internationally comparable data can play a significant role to raise awareness, stimulate research and drive investment (Wolfe, 2014). Comparable data can show what is achievable, provide knowledge on the levels of care, highlight strengths and weaknesses in individual countries (Fehr et al., 2017; UNICEF Innocenti Research Centre, 2013), and can encourage the improvement of national health systems (Verschuuren et al., 2013). Access to reliable, up-to-date and comparable health information is essential when implementing evidence-based EU public health policies. With these benefits in mind, and using a comprehensive approach to measuring public health, the EU produced the first set of 88 common European Community Health Indicators (ECHIs) (European Commission, 2016) in early 2001 (Kramers, 2003). Since then work has been ongoing on indicator accuracy, and their implementation in all EU Member States (ECHI, ECHI 2, ECHIM and Joint Action for ECHIM) (Verschuuren et al., 2013). However, despite the usefulness of these selected indicators, the focus is on general public health issues (Kilpeläinen et al., 2012), and have been criticised for being mainly based from an adult or household viewpoint, thus seriously under-representing the younger generation (Rigby, 2009).

The Child Health Indicators of Life and Development (CHILD) project, the only study to date with such a task, was commissioned within the Health Monitoring Programme

(Rigby et al., 2002), to determine a holistic set of indicators to measure the health and well-being for those aged one week to 17 years of age across Europe.

A systematic approach was used, guided by the ECHI category framework, which identified 38 core desirable national indicators. An additional set of 17 key child health topics were recommended for further research to identify and validate appropriate indicators (Rigby et al., 2003).

Since its creation and publication in 2003, the indicator set has created wider interest, (Rigby, 2009), for example, it was used by the World Health Organisation's Regional Office for Europe in preparing the 2005 triennial European Health Report (World Health Organization, EUROPE, 2005). However, the indicator set has had little impact within ECHI (Kramers, 2003).

Other important and complementary initiatives include EURO- PERISTAT, which addresses the period of pregnancy to the first week of life (Zeitlin et al., 2003b) (Zeitlin et al., 2003a), a joint action-orientated European initiative CEHAPE (Children's Environment and Health Action Plan for Europe) (World Health Organization, Europe, 2004), the Health-Behaviour in School-Aged Children study (HBSC, 2016), and RICHE (Repository Inventory for Child health in Europe) taxonomy, which contains information on over 460 validated child health indicators, providing knowledge and ongoing research findings to help inform health professionals in policy-making (Alexander et al., 2014; RICHE, 2014; Staines and Rigby, 2014).

The number of indicators available on children and young people's health and well-being can be overwhelming, and despite the need for more data on child health information to be collected, to quote Köhler, "we can also start doing something with the knowledge we already have" (2017, p.7).

3.3 Aim

To identify indicators on children and young people's health and well-being, which could be measured and monitored at EU-Level, by using existing databases and knowledge.

3.4 Methodology

Identify Domains

With the intention to seek a balanced overall coverage of children and young people's health and well-being using a multi-dimensional approach, domains, also known as topic areas, were identified which formed the focus of the research.

The CHILD (Child Health Indicators for Life Development) project (Rigby et al., 2002), was strongly guided by European Commission officers to use the framework already devised by the partner project on European Community Health Indicators (ECHI), which has produced a robust meta-analysis framework.

In its conclusion, the CHILD project recommended 38 core valid, consistent and feasible national health indicators, across four dimensions listed below (Table 10).

Table 10: *Child Health Indicators for Life Development (CHILD) project (2003) recommended list of indicators (n=38)*

Dimension	Domain (Topic Areas)	Indicator
A. Demographic and Socio-Economic		A1. Socio-Economic Circumstances
		A2. Children in Poverty
		A3. Parental Educational Attainment
		A4. Child in Single Parent Households
		A5. Asylum Seekers
B. Child Health Status, Well-Being	Child Mortality	B1. Child Mortality Rates
		B2. Selected cause-specific Mortality
	Child Morbidity	B3. Cancer
		B4. Diabetes
		B5. Asthma
		B6. Infectious Disease
		B7. Dental Morbidity
	Injuries to Children	B8. Burns, Necessitating Admission
		B9. Poisoning Necessitating Admission
		B10. Fracture of Long-Bones
	Mental Health	B.11 Attempted to Suicide
C. Health Determinants, Risk, and Protective Factors	Parental Determinants	C1. Breastfeeding
		C2. Household environmental tobacco
		C3. Parental support
	Child Lifestyle Determinants	C4. Physical activity
		C5. Tobacco Smoking
		C6. Alcohol Abuse
		C7. Substance Misuse
	Other Factors	C8. Overweight and obesity
		C9. Children in care
		C10. Early school leavers
		C11. Education enrolment
		C12. Air pollution exposure
D. Child Health Systems and Policy	Health Systems Policy	D1. Marginalised children's health care
		D2. Parental inpatient accompaniment
	Health Systems Quality	D3. Immunisation coverage
		D4. Leukaemia 5-year survival
	Social Policy Indicators	D5. Physical punishment
		D6. Anti-bullying policies in schools
	Physical Protection Policy	D7. Child transportation safety
		D8. Exposure to lead
		D9. Exposure to hazardous Noise
		D10. Environmental tobacco smoke

By adopting this framework, a platform of domains on children and young people's health and well-being were created. The above indicator list required renovation for the use of this intended study for two main reasons. Firstly, the CHILD project was carried out in 2002, and since then, new data sources containing child health information have been developed. Secondly, our study focused on a specific population age group, i.e. those aged zero-24.

The suggested CHILD indicator set focused on children aged one week to 17 years of age. Additional domains were developed to meet the needs of young people (up to the age of 24), for example employment, transition into work, participation and engagement, sexual and reproductive health, and crime and protection.

Identify Indicators

In addition, The CHILD project (Rigby et al., 2002) identified 17 key child health topics on which further research work was needed (Table 11).

Table 11: *Child Health Indicators for Life Development (CHILD) project (2003) recommended topics for further research on child health indicators (n=17)*

Recommended topics for further research	
Child abuse	Health care access
Childhood behaviour disorders	Inpatient service quality
Learning disorders/intellectual disability	Health service access for socially restricted children
Educational development	Medication
Perceived well-being, quality of life and positive mental health	Play and leisure
Children with permanent or severe disability	Assessment of children with special needs
Family cohesion and social cohesion	Integration of children with special needs
Nutritional habits	Healthy parenting
Mental health education	

This list was used as a guide to research potential indicators which may been developed since 2002. For example, one recommendation was 'Perceived well-being, quality of life and positive mental health'. In recent years, there has been vast research conducted on the importance of measuring subjective well-being, and its beneficial effect on other life domains (Howell et al., 2007). An indicator was identified from the

Health Behaviour in School-Aged Children study (2016) which measured children's life satisfaction, based on the Cantril Ladder score.

At times, like the CHILD project, we felt constrained in doing this task by the limitations of the available evidence, or limited recognition for identified measures. The CHILD project recognised that indicators must have the fundamental attributes of being scientific, robust and comparable. We aimed to identify and select indicators of the same technical merit, which appeared relevant and measurable as potential indicators.

A complete list of all data sources used, with full references, including the Sustainable Development Goals, Eurostat, and UNICEF National Adolescent Assessment Cards, Mental Health Atlas World Health Organization, National Suicide Research Foundation and others can be found in Appendix C. Other sources, outside of Europe were examined, these included: Child Trends Databank indicators, in the United States, and the Life Course Metric Project in the United States. Indicators identified within these datasets included data on incarceration rates for those aged 13-24, which we found difficult to identify within Europe. These were regarded as examples of what could be potentially implemented.

The Screening Process

A list of 150 potential indicators were identified across 25 domains. The list was distributed to health researchers whom were part of the maternal and child health team within the **BR**idging **I**nformation and **D**ata **G**eneration for **E**vidence-based **H**ealth policy and research (BRIDGEHealth, 2017) project.

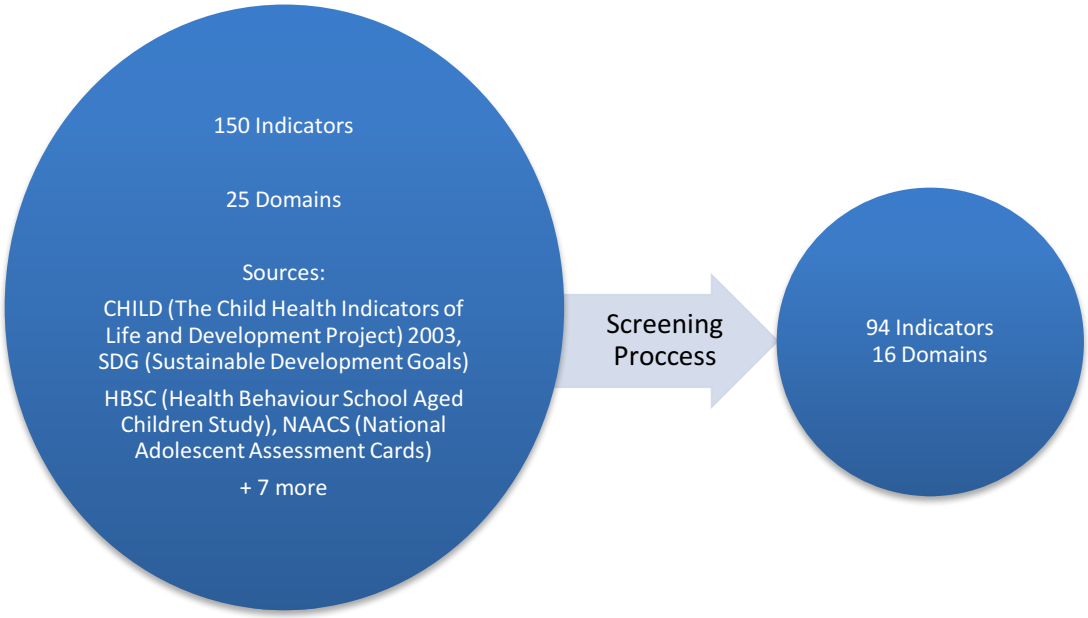

Figure 4: *The indicator screening process*

As far as possible, the indicators were presented exactly as presented in their original sources, but in a few cases some editing was necessary to reflect our specific age group. For example, the Sustainable Development Goals 'Employment Rate' indicator is aimed at entire populations aged over 15, segregated by sex, age, and people with disabilities. This title was adapted to meet our specific age group (i.e. 15-24).

There was substantial overlap between the indicators. The duplicates were omitted and when feasible, indicators were merged. For example, within the Health Behaviour in School-Aged Children (HBSC) study there are five indicators that reflect 'Eating Behaviours'. These five indicators were merged into three indicators, i.e. Drinking soft drinks and eating sweets every day, eating breakfast every school day and eating fruit and vegetables every day.

The indicators were screened, and those that were felt to be of limited relevance to the needs of children and young people in Europe, for example, childhood stunting rates, were removed. The final task was to assemble the adapted indicator titles, including the data source, and references into one spreadsheet for panellists to access.

Table 12: *Changes to indicator set because of the screening process (total number)*

	Screening Process (n)
Excluded due to limited relevance	9
Removed (duplicates)	14
Merged with another indicator	17
Adapted Titles	64

3.5 Results

Subsequently, a total of 16 domains were merged into a single integrated set of proposed indicators across four dimensions. A complete list of the 94 indicators, with their full titles, and references can be found in Appendix D.

Table 13: *The final list of dimensions and domains including the total number of indicators in each domain (n)*

A. Demographic and Socio-Economic	**B. Education and Employment**	**C. Health-Related Behaviours**	**D. Health System and Policy**
Mortality and Morbidity (6)	Education (9)	Lifestyle Determinants (10)	Health and Social Policy (6)
Poverty (4)	Employment (4)	Disability and Injury (2)	Disability (4)
Crime and Protection (8)		Mental Health (6)	Environment (6)
Social Indicators (7)		Parental Determinants and Relationships (7)	Health System Quality (3)
		Reproductive and Sexual Health (8)	Participation and Engagement (4)

3.6 Strengths and Limitations

The focus on published work in English may have introduced a bias to the results. It was likely that unpublished papers exist. There may be relevant papers published in other languages, although we failed to identify any.

Moreover, given the numerous disciplines which could be represented by the label “health” and “well-being”, it was possible that pertinent indicator studies were missed in the search that was performed.

Due to some limitations in information availability, some indicators proposed were not guaranteed to be routinely monitored or validated, locally, nationally or internationally.

Despite using a structured and systematic approach to indicator selection, and the use of two previous EU indicator specific projects (CHILD and ECHI) as a guide, the final choice of domains and indicators included in the final list was subjective.

3.7 Discussion and Conclusion

The use of indicator is now an established way to measure and monitor children's health and well-being (Köhler, 2016). The information gathered should be used for decision-making in policy and management cycles in health care services and healthy systems (Klazinga et al., 2001). However, one single indicator nor one single domain can describe public health and well-being. There is wide agreement (Bradshaw et al., 2006) that population health and well-being is multi-dimensional, and relates to outcomes in the areas of social participation, education and employment, housing, environment, financial security and subjective well-being.

This research aimed identify possible indicators to measure and monitor the health and well-being of children and young people across Europe, using existing databases and knowledge. It was guided by previous work in this area, and particularly by the Child Health Indicators for Life Development (CHILD) project (2003). Four dimensions were developed intended to reflect both the evidence in relation to what is important for the health and well-being of children and young people aged zero to 24, but also the specific values or policy priorities within Europe.

The inability to describe and validly compare children and young people's health and well-being in a standard way (Bradshaw et al., 2006; Cattaneo et al., 2012) acts as a barrier to informed policy decision making. A single set of child and young people's health and well-being indicators, if implemented by all EU Member States, could greatly increase cross-European comparability. This would be making more effective use of current data and knowledge.

3.8 Future Research

At times, we felt constrained in identifying possible indicators by the limitations of the available evidence, or limited recognition for identified measures. There is a need for more data collection on children and young people's health information in Europe.

This list of indicators was used in the first round of our Delphi Study, which aimed at establishing consensus on an agreed list of indicators to monitor the health and well-being of children and young people in Europe. The list itself identified and indicated domains which are important health determinants, but we believe that there are several wider areas where deeper research would be beneficial. Determining the views of children and young people to these proposed indicators, should be considered, for example through discussions in Children's Parliaments and similar bodies. Additionally, future work should include experts from a wider variety of disciplinary backgrounds.

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Linking Narrative 2

The following chapter of this thesis (chapter 4) presents the next three phases of the overall Delphi approach. The previous chapter discussed the exploration phase, i.e. the selection of indicators through indicator screening. The final list of indicators contained 94 indicators, grouped across 16 domains within four dimensions. The complete list of indicators, with their sourced references, can be found in Appendix D.

This list of indicators was used for round one of the Delphi study. The following chapter, chapter four, will present the three-round Delphi surveys and the results.

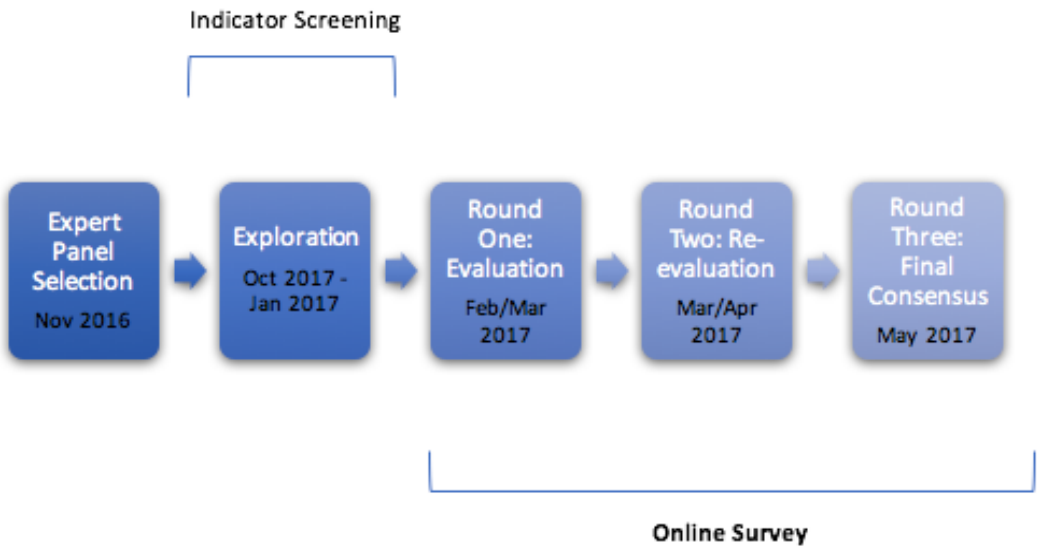

Figure 5: *The overall Delphi approach and timeline (part two)*

Chapter 4: The Delphi Process

Consensus on Child and Young People's Health and Well-Being Indicators for Europe

Table 14: *Aim and objective for the Delphi Process*

Aim	Objective	Method
Report on ways of making more effective use of data to examine the lives of children and young people in Europe.	To establish consensus on an agreed set of indicators to measure and monitor the health and well-being of children and young people across Europe.	Delphi Technique

4.1 Abstract

Background: The need to increase cross-European data comparability was identified as a key recommendation in a questionnaire amongst health professionals who work with health information on children and young people's (i.e. those aged 0-24). One way to achieve this may be through the establishment and implementation of an agreed set of indicators to measure and monitor the health and well-being of children and young people across Europe. Indicators play a vital role in the identification of trends and issues and support priority setting and policy formation (Nardo et al., 2005). There are substantial differences between European Member States health systems, and in how each country measures and monitors population health and well-being, making it difficult to construct valid comparisons. Reliable, valid and comparable data are required to enable evidence-based health policies to maximise the quality of lives for children and young people living in Europe.

Aim: To establish consensus on an agreed set of indicators to measure and monitor the health and well-being of children and young people across Europe.

Method: A three-round Delphi process was carried out. Online questionnaires were distributed to health professionals across Europe who work with health information on children and young people.

Results: The final set contained 32 key indicators to measure and monitor children and young people's health and well-being across Europe. Of these, 21 indicators were reported as widely available. The remaining 11 were reported as not widely available, but recommended by panellists to be made compulsory for all Member States to collect.

Conclusion: There are considerable differences in reported information availability. Gaps in health data should be properly addressed. These results could be used as a guide to future research on indicator development at EU-level. These findings provide a basis on which an international set of children and young people's health and well-being indicators can be established. Much more work is needed at EU-Level for this to happen. The results emphasise that information needs to be more accessible to health professionals and policy-makers, to enable efficient policy-decision making based on the best available, reliable and comparable evidence.

4.2 Introduction

Indicators play a vital role in the identification of trends and issues, support priority setting and policy decision making (Nardo et al., 2005). The need to increase cross-European comparability was identified as a key recommendation in a questionnaire amongst health professionals who work with information on children and young people's health and well-being across Europe. One way to achieve this was through the establishment and implementation of an agreed set of indicators to measure and monitor the health and well-being of children and young people, i.e. those aged zero to 24, across Europe.

"Limited knowledge can hardly provide a sound basis for more extensive public health policies" (Köhler, 2017). Public health policies have a direct impact on the quality of lives for children and young people in Europe. Limited knowledge available at local-level (Alexander et al., 2015), or on children whom are members of marginalized groups, such as Roma or Irish Travelling Communities, can impede evidence-based policy making. Health professionals and policy makers require access to reliable, valid and comparable data on population health and well-being (Kilpeläinen et al., 2012; Revere et al., 2007; Verschuuren et al., 2013). Lack of health information for many indicators means that most countries to rely on traditional mortality figures, rather than basing their health policies on health determinants (Detels et al., 2009).

Internationally comparable health information can also play a significant role. It has demonstrated what is achievable, highlighted strengths and weaknesses in individual countries, provided knowledge on the levels of care delivered, the distribution of risk and protection factors, (Fehr et al., 2017; UNICEF Innocenti Research Centre, 2013), and can encourage the improvement of national health systems (Verschuuren et al., 2013).

These advantages are recognised, and there have been various EU-level bodies, and projects, aimed at developing and implementing comparable national-level indicators. Examples include, primarily the European Core Health Indicators (ECHI) (European Commission, 2016) with the current set containing 88 indicators, the Sustainable Development Goals, and more specific to children's health and well-being, the CHILD (Child Health Indicators for Life Development) project (Rigby et al., 2002), and the Health Behaviour in School-Aged Children surveys (HBSC, 2016).

However, to quote the most recent European Union Child Health report, there remains an “inability to adequately describe and compare child health and well-being across Europe in a standard and valid way” (Cattaneo et al., 2012).

The EU and Organisation for Economic Co-operation and Development (OECD) Handbook (OECD, 2008) argued:

‘A well-designed Index can provide a comprehensive vision of a multidimensional phenomenon and allows for the setting of national benchmarks and for further international comparisons and is a starting point for analysis and discussion’.

The European Union (EU), similar to that of most national-level approaches, to monitoring public health and well-being, is inherently multi-dimensional. This has been endorsed by setting the main determinants within each other and highlighting interrelationships between the different aspects (Dahlgren and Whitehead, 1991). As previous literature suggests, this is largely because health and well-being are intricately linked (Rigby, 2009), and thus, it is essential to include a broad range of factors across multiple life domains, related to the person and their social and environmental context (Stiglitz et al., 2009).

For the purpose of this research, four dimensions were developed (chapter three) based on previous EU-level work, to reflect the health and well-being of children and young people aged zero to 24;

A. Demographic and Socio-Economic
B. Education and Employment
C. Health-Related Behaviour
D. Health System and Policy

Domains, also known as topic areas, were assigned to each dimension. Köhler, affirmed that a “coherent and distinctive set of indicators in each domain will make a composite index more solid and reliable” (2016, p.805)

4.3 Aim

The aim of this research was to establish consensus on an agreed set of indicators to measure and monitor the health and well-being of children and young people across Europe.

To achieve this, it was decided that the Delphi technique was the best approach. This is a useful method to determine the degree of consensus, on answers to questions, and has the potential to create an environment that produces credible results based on evidence and experts' knowledge (Fink et al., 1984; Hasson et al., 2000).

It is a very flexible method that can accommodate many variations and applications. It is economical and makes the potentially confounding interpersonal processes often occurring in 'live' groups less likely (Iqbal and Pipon-Young, 2009).

However, there are also disadvantages to using the Delphi technique. The Delphi process suffers from a lack of guidance, agreed standards, and criteria, as found by Jünger et al.'s (2017) literature review where there was considerable variation in the Delphi design, conduct, and reporting, of the studies assessed (Black et al., 1999; Day and Bobeva, 2005; Diamond et al., 2014; Hasson et al., 2000; Hasson and Keeney, 2011). To combat this, Jünger et al. (2017) and another recent literature review, Boulkedid et al., (2011) provide some guidance and recommendations on the development of best practice and a standard for transparent reporting.

In addition, when using the Delphi technique, generalisability may be limited as another panel might reach different conclusions, given the same inputs, and it cannot be assumed that the results of one study are definitive. The process also lacks some of the richness and depth which could develop in 'live' groups, for example, focus groups (Iqbal and Pipon-Young, 2009).

4.4 Methodology

The Delphi Technique

The Delphi technique was used as it is a useful method to determine the degree of consensus among experts. The definition of consensus used was a "general agreement; the opinion of most people" (Summers, 1987).

It has become an increasingly popular method that has been applied in various medical, public health, social policy and research settings (Black et al., 1999; Fink et al., 1984; Nair et al., 2011). Previous studies aimed to generate indicator consensus have used the Delphi technique, for example, prescribed indicators for general practice in the United Kingdom (Campbell et al., 2000), or more recently, Ireland's National Positive Ageing Indicators (Department of Health Ireland, 2016).

Ethical approval

Ethical approval was granted for this research by Dublin City University Research Ethics Committee (DCUREC/2016/199) (Appendix H).

Selection of experts

Panellists were a multi-disciplinary group of health professionals who work with children and/or young people's health information. Panellists were recruited from the BRIDGE Health Network, national and international child health colleagues, European Public Health Association attendees, and the European Repository Inventory for Child Health Research (RICHE) network. Within the invitations via email to take part in round one of the Delphi process, panellists were asked to share the invitation amongst their own colleagues and networks.

All panellists were invited to participate in this research because of their expertise, which can ensure that indicators are relevant and useful for stakeholders (Bodart and Shrestha, 2000). The indicators assessed spanned 16 domains across the four dimensions listed above. Participants were asked to answer questions on dimension(s) which they felt most appropriate, based on their expertise.

A three-round Delphi process was used. Panellists who took part in round one were invited to leave their email to take part in subsequent rounds of the process. Detailed instructions were provided with each round. As each round was anonymous, basic demographic questions including country, occupation and type of organisation panellists worked in, were asked in each survey. A copy of each Delphi round containing the full context of the questions can be found in Appendix (E, F, G).

Administration

A link to the individual Delphi survey, indicator information and results were sent to panellists via email. An online survey software, Qualtrics, was used to access the

surveys (Qualtrics, 2017). This method was environmentally friendly, cost effective, time efficient, improved data quality and enabled respondents to participate from diverse geographical location (Barrios et al., 2011; Chang et al., 2010; Gill et al., 2013; Kaplowitz et al., 2004).

Following common practice, each survey was open for two to three weeks (Cowman et al., 2012; Edwards et al., 2009; Geist, 2010). In addition, there were three follow-up reminder emails per round (Fan and Yan, 2010; Gill et al., 2013).

Round One

Panellists were asked to rate the importance of each individual indicator on a five-point scale (1: Not at all important, to 5: Very important). Panellists were also requested to rank the indicators in order of priority per domain. The final question assessed the balance and coherence of the overall dimension. This was an open-ended question which provided an opportunity for panellists to provide feedback on which indicators to exclude or include to make a more balanced indicator set.

Round Two

Panellists were asked to re-rank the indicators in order of priority per domain. Newly added indicators were presented in their respective domains. Panellists were asked, for each indicator, if they believed it to be widely available in their country, and if not, whether it would be feasible to collect it.

Round Three

Indicators were presented in two sets within each domain, i.e. those highly ranked and reported as widely available, and those highly ranked and reported as not widely available.

For indicators in the first set, panellists were asked if they agreed that these were useful indicators for their respective domains, and their view on which of the indicators should be made a priority for all EU Member States to collect. If they selected ‘no’ to the indicator(s) being made a priority to collect per domain, an open-ended question provided the panellists an opportunity to explain why the indicator(s) should not be used.

Indicators from the second set (i.e. those were highly ranked and reported as not widely available in Round 2) were then presented, each in their dimension. Panellists

were asked to rank the indicators in order of priority.

Below (Table 15) is a summary of all indicator assessment criteria that were included in each round.

Table 15: *Summary of Delphi survey content*

Evaluation Criteria	**Delphi Rounds (number of indicators)**		
	Round One (n=94)	Round Two (n=96)	Round Three (n=53)
Indicators			
Importance (5-point scale)	**√**		
Ranking (indicators within domains)	**√**	**√**	
Availability		**√**	
Potential to be measured		**√**	
Agreement on consensus (indicators per domain)			**√**
Ranking (indicators within dimensions)			**√**
Domains and Dimensions			
Indicators present a balanced and coherent picture of each dimension in the EU	**√**		
Open ended feedback after each dimension	**√**		
Open ended feedback after each domain			**√**

Analysis

Qualtrics software allowed direct import for data analysis. R version 3.3.0 was used for quantitative analysis (R Core Team, 2016). Open-ended answers were transported into Microsoft Word, and analysed systematically, using thematic analysis.

4.5 Results

Response Rates

Table 16: *Response rates per round and dimension*

	Round One	Round Two	Round Three
Date	Feb/March 2017	March/April 2017	May 2017
Completed questionnaires returned (n)	179	69	55
Response Rates (%)	Unknown	70.4%	56.1%
Total participants (n) per dimension:			
A: Demographic and Socio- Economic	166	63	52
B: Education and Employment	110	52	50
C: Health-Related Behaviour	125	59	54
D: Health Systems and Policy	99	51	52

Demographics

The health professionals came from various backgrounds including researchers, clinicians, and epidemiologists, mostly based within Europe (above 90% in all three rounds). Ireland had the highest number of respondents, followed by Germany and the United Kingdom, and most health professionals worked within a University or third level institution. More details on the panellists can be found in Appendix J.

Round One

Almost all indicators had an average rating of 4 'important' or 5 'very important'. Rankings of the indicator per domain, and their levels of consensus, as measured by the median absolute deviations, were used as discriminants for exclusion. The three indicators that were excluded are listed below (Table 17).

Table 17: *Indicators excluded from the indicator set after Round One results*

Dimension and Domain	**Indicator**	**Delphi Round**	
		Round One	
		Rank	**Importance (1-5)**
A. **Demographic and Socio-Economic**			
Mortality and Morbidity	Dental Morbidity	6	4
B. **Education and Employment**			
Education	% Technical and Vocational Education and Training	8	4
D. Health System and Policy			
Participation and Engagement	Union Membership	4	3

Two domains were merged. 'Disabilities and Injuries' merged with 'Mortality and Morbidity' to form 'Mortality, Morbidity and Disability' in Dimension A (Demographic and Socio-Economic). Based on the panellist's feedback, five new indicators were added to the indicator list (Table 18). More information on the newly added indicators, along with their references, can be found in Appendix I.

Table 18: *Indicators added to the indicator set after Round One results*

Dimension and Domain	Indicator
A. Demographic and Socio-Economic	
Poverty	Household Crowding
Social Indicators	Internet Access in the Home
C. **Health-Related Behaviour**	
Lifestyle Determinants	Active Play
Mental Health	Hospital-Treated Episodes of Deliberate Self-Harm
D. **Health System and Policy**	
Participation and Engagement	Participation in Sports Clubs, Leisure Time and Youth Clubs/Associations or Cultural Organizations

Round Two

There was not much change in indicator rankings across domains. Indicator availability was assessed with a consensus of 75%. This meant an indicator that was reported as being available by 75% or more of respondents was considered to be widely available, otherwise the indicator was reported as not widely available. Panellist's ranged each indicators potential of being made available (for those that were reported as not widely available) from 15% (Child Abuse) to 90.9% (Income Equality).

Indicator rankings as per domain was used as exclusion criteria. The lower half of the ranked indicators were removed (Table 19). For example, out of eight indicators in the 'Education' domain, the lowest 4 in the ranked order were excluded for round three. A total of 43 indicators were removed.

Table 19: *Indicators excluded from the indicator set after Round Two results*

Domain	Indicator	Delphi Round		
		Round Two		
		Rank	Availability (%)	Potential (%)
A. **Demographic and Socio-Economic**				
Mortality, Morbidity and Disability	Asthma	5	47.5	68.4
	Infectious Disease	6	92.3	-
	Hospital Admissions Due to Injury	7	82.1	-
Poverty	Child Labour	4	30.2	23.5
	House Crowding	5	43.5	35.3
Crime and Protection	Human Trafficking	5	10.2	21.7
	Early Age at Marriage/Union	6	66.7	78.6
	Incarceration Rates	7	95.8	-
	Intentional Homicide	8	100.0	-
Social Indicators	Birth Registration	5	96.5	-
	Asylum Seekers	6	84.9	-
	Receipt of Child Benefit	7	86.4	-
	Internet Access in the Home	8	56.9	64.7
B. **Education and Employment**				
Education	Early School Readiness	5	13.3	28.0
	Educational Aspiration	6	7.7	32.1
	ICT skills	7	25.6	26.3
	Liking School	8	30.4	21.4
Employment	Income Equality	3	60.9	90.9
	Financial Literacy and Savings	4	15.6	27.8
C. **Health-Related Behaviour**				
Lifestyle Determinants	Sedentary Behaviour, Watching Television and Screen Time	7	43.8	61.1
	Leisure Activity	8	40.6	58.8

	Eating Behaviours: Eating breakfast	9	47.5	60.0
	Oral Health	10	49.1	53.3
	Active Play	11	12.3	34.6
Mental Health	Suicide Ideation and Attempts	5	24.5	38.1
	Mental Health Service Use	6	86.0	-
	Hospital-Treated Episodes of Deliberate Self-Harm	7	84.9	-
Parental Determinants and Relationships	Child in Single Parent Households	5	88.9	-
	Close Friendships	6	20.8	22.2
	Electronic Media Contact	7	26.9	31.3
Reproductive and Sexual Health	Abortion Rate	5	53.1	30.8
	Women Informed Decisions	6	14.3	22.7
	Children and Young People AIDS Incidence Rate	7	92.6	-
	Age at First Intercourse	8	53.2	33.3
D. **Health System and Policy**				
Health and social policy	Anti-Bullying Policies in Schools	4	55.0	72.7
	Physical Punishment	5	62.5	37.5
	Migration Policy	6	70.0	80.0
Disability	Teacher Education	4	68.4	75.0
Environment	Provision of Public Spaces	4	63.6	62.5
	Exposure to Hazardous Noise	5	48.7	25.0
	Exposure to Lead	6	60.0	50.0
Health Systems Quality	Parental Inpatient Accompaniment	3	44.2	50.0
Participation and Engagement	Participation in Clubs	4	38.5	70.0

Round Three

Most panellists agreed with the use of the indicators that were highly ranked and reported as widely available. The agreement ranged from 84% ('Attempted to Suicide') to 100% ('National Poverty Rate' and 'Jobless households') that these indicators should be made a priority for all Member States to collect. There was a wider range of views across the set of indicators that were highly ranked, but not reported as widely available, as to which were worth collecting.

Indicators where over 70% of panellists agreed on making the indicator a priority to collect, were recorded as reaching a consensus.

A total of 32 indicators reached consensus. Of these, 21 were reported as widely available (Table 20), and 11 were reported as not widely available, but panellists felt they should be made a priority for all Member States to collect (Table 21).

The indicators that were reported as not widely available and did not reach consensus to be made a priority to collect, were ranked in order of priority within their relative dimension. Table 22 presents the top four ranked indicators within each dimension, according to median absolute deviations.

Table 20: *Indicators that reached consensus and were reported as widely available (n=21)*

Domain	Indicator	Delphi Round
		Round Three
		Consensus (%)
A. Demographic and Socio-Economic		
Mortality, Morbidity and Disability	Total Mortality Rates	95.8
	Selected Cause-Specific Mortality	95.8
Poverty	Poverty (National)	100.0
	Jobless Households	100.0
Social Indicators	Socio-Economic Circumstances	97.9
	Income	97.9
	Children in Care	97.9
B. Education and Employment		
Education	Education Completion Rate	93.9
	School Drop-out Rate	93.9
	Early Childhood Education Rate	93.9
Employment	% NEET	93.9
	Unemployment Rate	93.9
C. Health-Related Behaviour		
Mental Health	Attempted Suicide	84.0
Reproductive and Sexual Health	Adolescent Birth Rate	92.0
	Sexually Transmitted Infections (STIs)	92.0
D. **Health System and Policy**		
Disability	Education Facilities	90.0
	Integration of People with Disabilities into Employment	90.0
Environment	Environmental Tobacco Smoke	88.0

	Transportation Safety	88.0
Health Systems Quality	Immunisation Coverage	88.0
	Leukaemia 5-year Survival	88.0

Table 21: *Indicators that reached consensus and were reported as not widely available (n=11)*

Domain	Indicator	Delphi Round
		Round Three
		Consensus (%)
A. Demographic and Socio-Economic		
Mortality, Morbidity and Disability	Abnormal BMI	82.0
	Disability Rate	80.8
Crime and Protection	Child Abuse	91.7
Social Indicators	Access to Services	79.2
C. Health-Related Behaviour		
Mental Health	Prevalence of Depression & Anxiety	88.2
	Life Satisfaction	71.7
Reproductive and Sexual Health	Contraceptive Use	71.2
D. Health System and Policy		
Health and social policy	Mental Health Policy	80.0
Disability	Integration of People with Disabilities in Schools	82.7
Environment	Exposure to Air Pollution	90.0
Participation and Engagement	Participation in Decisions	84.0

Table 22: *Indicators that did not reach consensus and were reported as not widely available, but were highly ranked in order of priority within their dimension (n=12)*

Dimension	Indicator	Rank
A. Demographic and Socio-Economic		
Disability Rate		1
Abnormal BMI		
Child Abuse		
Access to Services		2
C. Health-Related Behaviour		
Physical Activity		1
Tobacco Smoking		2
Prevalence of Depression & Anxiety		
Life Satisfaction		
D. Health System and Policy		
Mental Health Policy		1
Health Care for Marginalised Groups		2
Integration of People with Disabilities in Schools		
Exposure to Air Pollution		3

Overall Results

For more information on the results of each individual indicator per Delphi round, and the overall total figure transitions within domains and dimensions, relevant tables can be found in Appendix J.

4.6 Strengths and Limitations

The use of an online questionnaire allowed for a diverse range of health professionals across Europe to participate in this study. Several strategies were adopted to enhance panel response rate and motivation. For example, limiting the survey to three rounds to reduce panel fatigue, on-going communication, quick turnaround time between

survey rounds, and returning the results of each round to panel members (Edwards et al., 2009; Gill et al., 2013; Keeney et al., 2010). Unfortunately, despite it being a European study, due to limited resources, the questionnaires could only be made available in the English language.

As of yet, there are no universally accepted requirements for using the Delphi technique (Hasson et al., 2000), and thus, approaches used have varied, depending on the specific research purpose (Keeney et al., 2006). A limitation to using the Delphi technique is that generalisations are limited, i.e. another panel may reach different conclusions, and it cannot be determined that the correct indicators have been identified. As an example, it was likely that the exclusion of dental health from a European set of indicators could be controversial.

This was a small-scale study. This work could be regarded as an initial starting point on how to potentially increase cross-European comparability. Much more work will be required to reach a general-consensus across all Member States to effectively implement children and young people's health and well-being indicators. In particular, a wider range of professionals and policy makers whose work affects children and young people ought to be included. There are several areas, especially some of most relevance to young people, which are not well represented in the indicators presented here. Examples include sexual identity and activity, criminal justice interactions, and housing and household formation.

4.7 Discussion and Conclusion

The aim of this research was to establish consensus on an agreed set of indicators to measure and monitor the health and well-being of children and young people across Europe. A final set of 32 key indicators was identified. Of these, 21 indicators were reported as widely available. The remaining 11 were reported as not widely available, however recommended by panellists to be made compulsory for all Member States to collect.

There was a remarkable difference in indicator availability reported across the different domains. Certain domains, such as education, employment, and health systems quality, reported higher amounts of indicators as widely available, compared

to domains such as participation and engagement, mental health, and crime and protection.

Previous research indicates positive associations between physical activity and better quality of life outcomes (Perales et al., 2014), whilst good quality social relationships can improve self-esteem, sense of belonging, and a person's sense of purpose (Thoits, 2011). In addition, there are positive effects on quality of life through participating in productive social activities, such as volunteering (Borgonovi, 2008; Bull and Aucoin, 1975). However, these Delphi results demonstrated the need for more information on some key areas affecting the health and well-being of children and young people.

Moreover, there was a significant variance between individual indicators reported as widely available. For example, the 'total mortality rates' indicator, was reported as 100% widely available. Contrary to this, indicators such as 'alcohol abuse', 'tobacco smoking', 'and physical activity' were all reported as not widely available. The lack of health information on many indicators provokes most countries to rely on traditional mortality figures, rather than basing their health policies on health determinants (Detels et al., 2009).

However, despite the lack of data availability reported by panellists for certain indicators, such as 'Child abuse', 'Access to services', 'Prevalence of depression and anxiety', 'Life satisfaction' and 'Participation in decisions', there was a high consensus on making it a priority for European Member States to collect this information. Some of these indicators were also reported as having the potential to be measured, for example 'Abnormal BMI' (65% potential). This could demonstrate Member States understanding of what is achievable to monitor at a population-level, and what should be made compulsory to measure. It was also important to note that not all indicators, particularly three indicators ('Physical Activity', 'Tobacco Smoking' and 'Health Care for Marginalized Groups') reached consensus on it being made a priority to collect, despite them being highly ranked within their relative domains and overall dimension.

The reported gaps in information should be properly addressed to ensure a valid multi-dimensional representation of children and young people's health and well-being across Europe. The EU, Member States and policy makers should ensure that future health policies are based on the best available evidence to meet the requirements of children and young people across Europe to maximize their quality of life.

4.8 Future Research

To make the lives of children and young people more visible in Europe, these gaps in health information must be addressed. The indicators that were reported as not widely available could be used to guide future work on making them more accessible, valid and/or comparable. For example, indicators within domains such as participation and engagement, mental health, and crime and protection were reported as remarkably deficient in availability. This could represent significant gaps in health information on children and young people in Europe and highlight the need for future research.

This research could be used as a starting point for future European work. Much more work is needed to move this forward at a broader EU-level, with an aim to develop an international set of indicators on children and young people's health and well-being. Follow-up studies should widen the number of experts involved in indicator selection to ensure a more balanced reflection of health professionals opinions across Europe. Although a broad range of domains were assessed across four dimensions, there are gaps in information within the indicator set used, especially regarding young people. Future work should include experts from a wider variety of disciplinary backgrounds. Determining the views of children and young people to these proposals, should be considered, for example through Children's Parliaments. The setting up of a working group at EU-level could be established, with the principal task and responsibility of managing the process of establishing and implementing an agreed set of indicators to measure and monitor the health and well-being of children and young people across Europe.

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Chapter 5: Discussion and Conclusion

5.1 Research Aims and Objectives

The health and well-being of children and young people, i.e. those aged zero up to and including 24 (UNCRC, 1989; UNDESA, 2008), is of significant importance to European public health for many reasons. Generally, children's health is improving in Europe. The latest report on Child Health in the European Union (EU) 2012, concluded "in no other part of the world do children enjoy better health and life conditions than in Europe" (Cattaneo et al., 2012, p.14). Information about children's physical, cognitive, social and emotional development has advanced (Köhler, 2017), and efforts have been made to prioritize children more explicitly in global and EU policies, for example the Sustainable Development Goals (SDGs) 2015-2030, which act as a guide to policy and action on many issues affecting the lives of children, young people and their families (UNICEF, 2016). There have been valuable EU projects contributing to the increasing knowledge of children and young people's health and well-being in Europe, some of which are still on-going, such as EURO-PERISTAT (Perinatal information system) (Euro-Peristat, 2017), Research Inventory for Child Health Europe (RICHE, 2014), and the development of a Child Research Cohort Strategy for Europe (CHICOS, 2010).

However, Europe does not face a perfect situation. Health inequalities remain a major challenge in Europe, whilst children and young people are particularly vulnerable to the demographic changes in society, economic downturns, the recent migration crisis, increased non-communicable disease rates and the effects of poverty. Poverty is an important determinant of health, contributing to large disparities in rates within and between European countries, with notably higher rates in marginalized groups, such as the Roma and Irish Travellers, shaping access to health care, education and good housing (Spencer et al., 2010; World Health Organization, Europe, 2014).

Health information inequalities are a challenge across European Member States. Even if the general health conditions for children have improved across Europe, these improvements have not been equally distributed, and subsequently; "too many children and groups of children are still invisible" within health surveillance and research (Köhler, 2017, p.3). Current health information systems differ significantly

across Europe (Rigby et al., 2002), and as of yet, there is no coherent health information strategy available (Kilpeläinen et al., 2012).

Since the 1990's, the European Parliament has highlighted the need for a sustainable health information structure (HIS) (Verschuuren et al., 2013) to provide high quality, internationally comparable, and accessible health data for the EU. Such a system would benefit EU health policy at large (Kilpeläinen et al., 2012)**.** The BRIDGE Health, **BR**idging **I**nformation and **D**ata **G**eneration for **E**vidence-based **H**ealth policy and research (BridgeHealth, 2017) project, aimed to prepare the transition towards a sustainable, integrated and comprehensive EU-HIS for both public health and research purposes. Amongst other benefits, an EU-HIS would increase data sharing and knowledge, identify gaps in data, improve the comparability of data, and steer future research.

This thesis work and its two specific aims (to report on the sources of data on children and young people's health and well-being in Europe, and to report on ways of making more effective use of data to examine the lives of children and young people in Europe) reflect that of the wider European project, BRIDGE Health.

The EU endorses a multi-dimensional approach to monitoring public health (Dahlgren and Whitehead, 1991). Well-constructed indicators are used to measure and monitor children's health and well-being (Köhler, 2016), and the use of indicators sets or frameworks, can make the results more comprehensible and easier to use for research and policy purposes. As health and well-being are inextricably linked (Rigby, 2009), it is important that the indicator sets reflect the complexity of children's lives.

There have been worthwhile efforts at EU-level to develop and implement comparable national-level indicators, primarily the European Core Health Indicators (ECHI) (European Commission, 2016) and the CHILD (Child Health Indicators for Life Development) project (2003). However, the ECHIs can be criticized for focusing on economically active adults or household viewpoints, thus under-representing children's circumstances. Data on children and young people's health and well-being can be submerged within their families, as in the case of children whom are members of marginalized groups, such as Roma or children of illegal and undocumented immigrant families, resulting in children becoming invisible (Köhler, 2017; Rigby, 2009).

Similarly, children and young people can often be invisible within national health policies and strategies. For example, Rigby et al., (2017) found that only eleven of 27 countries mention children and adolescents in their national e-health strategy document. These findings represent a potentially serious gap to supporting children and young people, and do not accord with the 'societal and health system duty of care to children' (Rigby et al., 2017, p.62).

Most countries, at a national level opt for the multi-dimensional approach to measuring both population health and well-being (Bradshaw et al., 2006), however, the number and type of dimensions to include, how many indicators in each dimension and their placements vary among researchers and policymakers (Köhler, 2016). As a result, as yet, we are unable to compare or describe children and young people's health and well-being across Europe in a standard or valid way (Cattaneo et al., 2012).

International comparisons of data can play a significant role in raising awareness, stimulating research and driving investment (Wolfe, 2014). The aim of EU policies and actions in public health is to improve and maintain the health of citizens (Verschuuren et al., 2013). Public health policies have a direct impact on the quality of children and young people's lives, their rights and their opportunities (European Parliament, 2011). Thus, future health policies should be based on reliable, up-to-date and comparable evidence to meet the requirements of children and young people across Europe to maximize their quality of life.

5.2 Summary of Findings

To meet the research aims, two empirical studies were carried out.

Health professional questionnaire

The health professional questionnaire provided valuable insights into the shared needs, opinions, and challenges, experienced by 294 health professionals across Europe. There are few formal studies on understanding the information needs of European health professionals reported, let alone, those specific to the health and well-being of children and young people. To the research team's knowledge, there has been no previous work on the information needs of health professionals addressing the health information of children and young people in Europe.

Professionals were asked questions on health information accessibility, availability, comparability and the utilization of different health data sources.

The findings offered a broad perspective on the different routine data and research data sources used across Europe, of which most health professionals use both data sources (68%). Six key recommendations were established on how to make more effective use of current health data on children and young people's in Europe. These include; to reduce information overload and increase data harmonization; create centralized access and improve delivery; improve authorization for access to information; improve timelines and quality of information; improve information technology and increase awareness of children and young people's health and well-being; and increase cross-European comparability.

This research provided us with data and a better understanding of what health professionals want, which we didn't have before.

The Delphi Process

One way to increase cross-European comparability of health data is through establishing a standardized set of agreed indicators, clearly specified and routinely collected by all Member States, to measure and monitor the health and well-being of children and young people. The Delphi technique was considered the most appropriate method for this task.

Building on from EU-Level projects and frameworks, for example, the comparable national-level European Core Health Indicators (ECHI) (European Commission, 2016), the Child Health Indicators for Life Development (CHILD) project (Rigby et al., 2002) and the Health Behaviour in School-Aged Children (HBSC, 2016) study, four dimensions containing 16 domains and 94 indicators were selected to reflect a multi-dimensional approach to measuring children and young people's overall health and well-being. This research builds from previous indicator work, including SDGs HBSC, the CHILD Project, and extends to include some issues for concern for young people.

The three-round Delphi process contained questions on these indicators, such as its importance, priority ranking, availability and overall balance as per dimension. The total participant size reduced per round (i.e. Round One: 179, Round Two: 69, Round Three: 55). Panellists consisted of health professionals from across Europe, mostly

researchers, and working at third level institutions. A final set of 32 key indicators reached consensus. Of these, 21 indicators were reported as widely available. The remaining 11 were reported as not widely available, however recommended by panellists to be made mandatory for all Member States to collect. This research contributed to the development of an indicator list, which could be used as a starting point for future European work to increase cross-European comparability of data.

5.3 Overall Strengths and Limitations of this Research

The overall results, from both empirical studies, provided compelling evidence of the culturally shared understandings of the issues under child and young people's health and well-being research across Europe. The use of online questionnaires allowed for a diverse range of health professionals across Europe to participate. The findings provide options for future research (discussed below).

Unfortunately, despite it being a European study, due to limited resources, the questionnaires were only available in the English language. The focus on published work in English may have introduced a bias to the results. It was likely that unpublished papers exist.

A major limitation to using the Delphi technique is that generalisations are limited. Elements of this study are inherently subjective. One of the weaknesses was the selection of indicators. There was an attempt to reflect a multi-dimensional approach, but there is an awareness that the choices of areas considered were limited. Although broad, there are gaps in information, in particular for adolescents and young people. Future work should include experts from a wider variety of disciplinary backgrounds.

5.4 Options for Future Research

Gaps in Information

To make the lives of children and young people more visible in Europe, the reported gaps in health information must be addressed to ensure a valid multi-dimensional representation of their lives. In particular, the lack of data available to health professionals at local-level, and on children whom are part of marginalized groups were issues for concern (chapter two).

Moreover, the Delphi results (chapter four) reported a remarkable difference in indicator availability across the different domains. Panellists reported indicators in certain domains, such as education, employment, and health systems quality, as widely available, compared to indicators in domains such as, participation and engagement, mental health, and crime and protection. The domains which were reported as remarkably deficient in widely available indicators could represent significant gaps in health information on children and young people in Europe and highlight the need for future work.

Health policies have a direct impact on the quality of lives for children and young people in Europe, and "limited knowledge can hardly provide a sound basis for more extensive public health policies" (Köhler, 2017, p.4).

Increase Cross-European Comparability

This research was a small-scale study. It could be regarded as a starting point for future European work. The Delphi results can be used to provide a basis on which an international set of children and young people's health and well-being indicators can now be established and implemented for Europe. Much more work is needed to move this forward at a broader EU-level. Follow-up studies should widen the number of experts from a wider variety of disciplinary backgrounds involved in indicator selection, to ensure a more balanced reflection of opinions across Europe. The setting up of a working group at EU-level could be established, with the principal task and responsibility of managing the process of establishing and implementing an agreed set of indicators to measure and monitor the health and well-being of children and young people across Europe.

EU-Health Information System

An overarching recommendation in this research is the establishment of a European Health Information System (HIS) with a responsibility to make European children, and their lives more visible. Health professionals require an easier way to access information, that is reliable, up-to date, valid, and comparable. The improved delivery of information could be achieved via a portal to information and resources, such as a European Child Health Observatory. Moreover, the BRIDGE Health (2017), project, aimed to prepare the transition towards a sustainable, integrated and comprehensive

EU-HIS, which would increase data sharing and knowledge within and between Member States, identify gaps in data, and improve data comparability.

5.5 Conclusion

There is a need for many children and young people's lives to become more visible in European health surveillance and research. Lack of actual, reliable, up-to-date and comparable data hampers a full understanding of European children and young people's health and well-being (Alexander et al., 2015; Cattaneo et al., 2012; Köhler, 2017; Rigby et al., 2003). More work is needed, but it is also possible to make more effective use of existing knowledge. Nevertheless, the future health and well-being of Europe's children is dictated by the health policies implemented by European Member States, and what is happening in the adult world. "Children become the victims or the beneficiaries of adult actions" (Cunningham, 2006, p.16).

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Appendices

Appendix A: Health Professional Questionnaire

Information on the health and well-being of children and young people across Europe.

Context

This study is being run by Sara McQuinn and Anthony Staines from Dublin City University, Ireland, on behalf of the European Commission funded BRIDGE Health project.

BRIDGE Health stands for BRidging Information and Data Generation for Evidence-based Health policy and research. Our overall aim is to create a comprehensive, integrated and sustainable Health Information System, to support evidence-based health policy and research, for the EU, for Member States, and for citizens.

Our focus here is on the health and well-being of children and young people (from conception to the age of 24) across Europe.

We have two main tasks :-

1. Review the extent and value of a range of possible sources of routine data on child and young people health across Europe.

2. Identify ways of making more effective use of routine data in order to examine the health and well-being of children and young people in Europe.

Your responses to this questionnaire and your work, will help us to better understand the needs for information on the lives of children and young people in the EU.

Please only complete this survey once.

Information on the health and well-being of children and young people across Europe.

Basic details about you and your country

* 1. In what country are you based?

Other (please specify)

2. What do you work as?

Other (please specify)

3. What type of organization do you work for?

Other (please specify)

Information on the health and well-being of children and young people across Europe.

4. Could you describe briefly how your own work relates to children and young people?

5. Which age groups does your usual work relate to? Please select all that apply.

- [ ] Pregnancy
- [ ] Birth - 1 year
- [ ] 1 year - 4 years
- [ ] 5 - 9 years
- [ ] 10 - 14 years
- [ ] 15 - 19 years
- [ ] 20 - 24 years

Information on the health and well-being of children and young people across Europe.

Health Information Sources

For the purposes of this study, the definition we are using for 'health information' is "any piece of information that relates to the health of an individual, the general population, or the provision of promotion, preventive or treatment services".

In your day to day work, you may need to access information on child and young people's health and well-being in your country, or other countries.

This information can be used in many ways, for example, in surveillance, design and implementation of services, or to measure outcomes.

It can be found in many sources, and for our purposes, we distinguish two groups :-

A. Routine Data Sources - Administrative data (e.g. Census, Vaccination records)

B. Research Studies - Reports of special studies or surveys (e.g. Longitudinal studies, HBSC, self-reported health questionnaires, patient satisfaction surveys or reports of individual studies)

Information on the health and well-being of children and young people across Europe.

* 6. Does your country have a specific national, or regional, child and young people health and well-being database or any similar health information system?

Information on the health and well-being of children and young people across Europe.

7. If yes, which level(s) does this system provide data for?

Other (please specify)

8. Can you briefly describe it?

Information on the health and well-being of children and young people across Europe.

A. Routine and administrative data sources

Routine data sources are administrative data, already collected by state or private agencies. Examples include census data, health service use data, birth and death records, hospital admission data, prescribing data, vaccination data, child health surveillance data, and many more.

* 9. Do you use routine data as a source of information?

- ◯ Yes
- ◯ No

Information on the health and well-being of children and young people across Europe.

A. Routine and administrative data sources

10.

List the most important types of routine data that you use in your daily work:
(For example; Vaccination rates, Education enrolment, housing conditions, tobacco smoking policies, physical activity)

1.
2.
3.
4.
5.

11. Please say how you usually access this information.
(e.g. WHO, OECD, Eurostat, National Census, National , Regional, or Local, reports or databases)

1.
2.
3.
4.
5.

12. Please suggest up to three sets of routine data that you would like to use in your work, but which you cannot access.

1.

2.

3.

Information on the health and well-being of children and young people across Europe.

B. Research Studies as a data source

The other main source of data on the health and well-being of children and adolescents, is the research literature. This includes studies published in journals, patient satisfaction surveys, self-reported health questionnaires and published reports from individual studies.

* 13. Do you use research studies as a source of information?

- ◯ Yes
- ◯ No

Information on the health and well-being of children and young people across Europe.

B. Research Studies as a data source

14.

List the most important types of research data that you use in your daily work:
(For example; physical activity, self-reported health, marginalised children's health care, children in poverty)

1.
2.
3.
4.
5.

15. Please say how you usually access this information :
(e.g. Internet/web, Library, Journal subscriptions, Project websites, ...)

1.
2.
3.
4.
5.

16. Please suggest up to three types of research data that you would like to have, to which you do not have access.

1.

2.

3.

Information on the health and well-being of children and young people across Europe.

Comparing Health Information Data

17. If you wanted to compare different regions within your country, where would you go to find comparable information?
(e.g. government sources, health authorities, European sources, research literature, colleagues,...)

18. If you wanted to compare your country with others, where would you go to find comparable information?
(e.g. government sources, WHO, OECD, Eurostat, research literature...)

Information on the health and well-being of children and young people across Europe.

Accessing Health Information

19. In general, when you want access to information for your own day-to-day work, can you easily get it?

Please explain further

20. How is this information made available to you? (Select all that apply)

- [ ] Freely online
- [ ] e-records
- [ ] Hard Copies/Paper
- [ ] Library Access
- [ ] On request though your work
- [ ] Other (Please briefly describe)

21. Can you get information on the health and well-being of children and young adults who are members of marginalized groups, such as migrants, Roma, illegal immigrants, and others, living in your country or your area.

Other (please specify)

Information on the health and well-being of children and young people across Europe.

Final Questions

22. Have you any suggestions on how to make information sources (Routine data/Research studies data) more effective in your day-to-day work?

23. Lastly, do you have any suggestions or thoughts, that you believe would be useful in making children and young people's lives more visible across Europe?

Information on the health and well-being of children and young people across Europe.

Contact details:

Thank you for taking the time to fill out this questionnaire.

If you would like for us to email you the findings from our survey, please leave your email in the box below.

If you have any queries or wish to contact us, please do not hesitate to do so;

¬ Anthony Staines; anthony.staines@dcu.ie, +353 86 606 9713

¬ Sara McQuinn; sara.mcquinn2@mail.dcu.ie, +353 87 612 1709

24. Your email address:

Appendix B: Ethics Approval - 'Health Professional Questionnaire'

Ollscoil Chathair Bhaile Átha Cliath
Dublin City University

DCU

Professor Anthony Staines
School of Nursing and Human Sciences

17th November 2015

REC Reference: **DCUREC/2015/229**

Proposal Title: **BRIDGE HEALTH**

Applicant(s): **Professor Anthony Staines, Ms Sara McQuinn**

Dear Anthony,

This research proposal qualifies under our Notification Procedure, as a low risk social research project. Therefore, the DCU Research Ethics Committee approves this project.

Materials used to recruit participants should state that ethical approval for this project has been obtained from the Dublin City University Research Ethics Committee.

Should substantial modifications to the research protocol be required at a later stage, a further amendment submission should be made to the REC.

Yours sincerely,

Dónal O'Mathúna

Dr Dónal O'Mathúna
Chairperson
DCU Research Ethics Committee

DCU
Research & Innovation

Taighde & Nuálaíocht Tacaíocht
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Appendix C: Complete List of Data Sources

Data Source	CHILD
Full Title	The Child Health Indicators of Life and Development Project
Reference Period	2003
Authors	Michael J. Rigby, Lennart I. Köhler, Mitch E. Blair, Reli Metchler
Methods	The project endeavoured to address all aspects of child health and its determinants, balancing positive and negative aspects. It undertook a structured search of published evidence to seek to identify, and validate, indicators of health and illness, health determinants and challenges to health, quality of healthcare support and health-promoting national policies. A systematic approach was used in identifying valid indicators, and in assembling a balanced composite list. All ages from infancy to adolescence were covered (age 0-17).
Results	The project's final report identifies 38 core desirable national indicators, citing purpose and evidence for each. Of equal importance, it also identifies 17 key child health topics on which further research work is needed to identify and validate indicators appropriate across different national settings.
References	https://ec.europa.eu/health/ph_projects/2000/monitoring/fp_monitoring_2000_frep_08_en.pdf
Data Source	**Child Trends**
Reference Period(s)	1979 – present day
Institution	Child Trends Headquarters, Washington, D.C. United States
Databank	The Child Trends Databank includes regularly updated data on more than 125 indicators of the well-being of children and youth, with clear summaries of the underlying research, explanation of important trends, and downloadable tables and graphs
References	http://www.childtrends.org/databank-indicators/
Data Source	**CDC**
Full Title	Centres Disease Prevention
Author	Maria Martinho, UN Secretariat of the Convention on the Rights of Persons with Disabilities
Report	Disability Indicators for the SDG (proposed)
References	https://www.cdc.gov/nchs/data/washington_group/meeting15/wg15_session_7_5_martinho.pdf
Data Source	

	Children and Young People: Indicators of Wellbeing in New Zealand
Institution	Ministry of Social Development New Zealand
Reference period	2008
Place	National Office Ministry of Social Development, Wellington, New Zealand
Method of data collection	New Zealand Census of Population and Dwellings 2001
References	https://www.msd.govt.nz/about-msd-and-our-work/publications-resources/monitoring/children-young-indicators-wellbeing/
Data Source	**EC**
Full Title	European Commission
Report	Commission Staff Working Document on EU Indicators in the field of youth
Reference Period	2011
Place	Brussels
Project	EU Youth Strategy
References	http://ec.europa.eu/assets/eac/youth/library/publications/indicator-dashboard_en.pdf
Data Source	**EuroStat**
Institution	EuroStat is the statistical office of the European Union situated in Luxembourg. Its mission is to provide high quality statistics for Europe.
Initiative/Dataset	The EU Labour Force Survey is a large household sample survey providing quarterly results on labour participation of people aged 15 and over as well as on persons outside the labour force.
References	http://ec.europa.eu/eurostat/data/database
Data Source	**GSHS**
Full Title	Global School-based Student Health Survey
Institution	World Health Organization
Goal	The goal of the GSHS is to obtain systematic information from students to support school health and youth health programs and policies globally.
Age range	13-17
Method of data collection	Self-administered Questionnaire

References	http://www.who.int/chp/gshs/en/ https://www.cdc.gov/GSHS/
Data Source	**HBSC**
Full Title	Health Behaviour School Aged Children Study
Institution	World Health Organization – Regional Office for Europe
Reference period(s)	2009/2010, 2013/2014
Data Collection frequency	Four year intervals
Data Content	Examines the physical and mental health of children and teenagers from a sociological perspective
Method of data collection	Self-administered questionnaire
Age range	11, 13 and 15 years
References	http://www.euro.who.int/en/health-topics/Life-stages/child-and-adolescent-health/child-and-adolescent-health2/youth-friendly-services/health-behaviour-in-school-aged-children-hbsc2.-who-collaborative-cross-national-study-of-children-aged-1115 http://www.hbsc.org/
Data Source	**IDEE**
Full Title	Indicators Disability Equality Europe
Institution	Human European Consultancy
Initiative	The Academic Network of European Disability Experts (ANED)
About	The Academic Network of European Disability experts (ANED) was created by the European Commission is December 2007. The aim is to establish and maintain a pan-European academic network in the disability field that will support policy development in collaboration with the commission disability unit.
Report	Indicators of Disability Equality in Europe (IDEE) A preliminary list of indicator proposals for discussion
Presenters	Mark Priestley and Anna Lawson
Year	2009
References	http://www.disability-europe.net/theme/statistical-indicators http://www.disability-europe.net/downloads/58-aned-2009-task-4-preliminary-indicator-proposals-report-100210
Data Source	**Life Course Metrics Project**
Institution	Association of Maternal and Child Health Programs (AMCHP)
Place	Washington, DC. United States

Project	Launched in early 2012, a collaborative effort to identify and promote a standardized set of indicators that can be used to measure progress using the life course approach to improve maternal and child health.
References	http://www.amchp.org/programsandtopics/data-assessment/Pages/LifeCourseMetricsProject.aspx
Data Source	**Mental Health Atlas**
Institution	World Health Organization
Report	Mental Health Action Plan 2013-2020
Year	2013
Publication	WHO Document Production Services, Geneva, Switzerland
Title	INDICATORS FOR MEASURING PROGRESS TOWARDS DEFINED TARGETS OF THE COMPREHENSIVE MENTAL HEALTH ACTION PLAN 2013-2020
Page	20
References	http://apps.who.int/iris/bitstream/10665/89966/1/9789241506021_eng.pdf?ua=1
Data Source	**NAACS**
Full Title	National Adolescent Assessment Cards
Institution	UNICEF – Office of Research Innocenti
Report	Measuring Adolescent Well-being: National Adolescent Assessment Cards (NAACs)
Date of Publication	2016
Series	Innocenti Research Briefs
Authors	Prerna Banati and Judith Diers
References	https://www.unicef-irc.org/publications/855/
Data Source	**NPAP**
Full Title	National Physical Activity Plan
Institution	National Physical Activity Plan Alliance
Project	National Physical Activity Plan (NPAP)
Report	'The 2016 United States Report Card on Physical Activity for Children and Youth'

Place	Columbia SC, United States
Year	2016
Data Content	The 2016 U.S. Report Card is the second comprehensive assessment of physical activity in U.S. children and youth, updating the first Report Card released in 2014. The primary goal of the 2016 U.S. Report Card is to assess levels of physical activity and sedentary behaviors in American children and youth, facilitators and barriers for physical activity, and health outcomes related to physical activity
References	http://www.physicalactivityplan.org/projects/reportcard.html http://physicalactivityplan.org/reportcard/2016FINAL_USReportCard.pdf
Data Source	**NSRF**
Full Title	National Suicide Research Foundation
Institution	The National Suicide Research Foundation is an independent, multi-disciplinary research unit that investigates the causes of suicide and self-harm in Ireland.
Report	National Parasuicide Registry Ireland
Sample size	Republic of Ireland; 4,043,800 (total population)
Year	2004
References	http://www.nsrf.ie/ http://www.drugsandalcohol.ie/3941/1/Parasuicide_Annual_report_2004.pdf
Data Source	**RICHE**
Full Title	Research Inventory for Child Health in Europe
Institution	European Union
Initiative	Seventh Framework programme. Accessible knowledge on Child Health comprising recent scientific publications, grey literature, and research projects, and creating a virtual research community.
References	http://www.childhealthresearch.eu
Data Source	**SDG**
Full Title	Sustainable Development Goals
Institution	United Nations
Initiative	UN Major Group for Children and Youth
Report	Targets and indicators for age in particular Children and Young People across the SDGs

Year	2015-2030
References	http://www.un.org/sustainabledevelopment/sustainable-development-goals/ https://childrenyouth.files.wordpress.com/2015/04/youth-targets-indicators_across-the-sdgs.pdf
Data Source	**UNICEF**
Project	The State of the World's Children 2013
Year of Publication	2013
Report	Children with Disabilities
Method of data collection	Demographic and Health survey (Census)
References	https://www.unicef.org/pacificislands/UNI137485(1).pdf

Appendix D: Final Indicator List for Delphi Round One

Source Legend:

Abbreviation	Full Title	Abbreviation	Full Title
CHILD	The Child Health Indicators of Life and Development Project	**IDEE**	Indicators Disability Equality Europe
CDC	Centres Disease Prevention	**NAACS**	National Adolescent Assessment Cards
GSHS	Global School-based Student Health Survey	**SDG**	Sustainable Development Goals
HBSC	Health Behaviour School Aged Children Study		

More information on each data source, with full references, can be found in Appendix C.

Dimension A: Demographic and Socio-Economic

Domain: Mortality and Morbidity

Indicator	Title	Source
Infectious Disease	Annual incidence per 100,000 population of measles, bacterial meningitis, tuberculosis in age groups 0-4, 5-9, 10-14, 15-17, 18-24, by socio-economic group (*)	CHILD
Total Mortality Rates	Total Mortality Rate, by sex and socio-economic group when available, for those a) between birth and exactly one year of age (infant Mortality Rate), b) between birth and exactly five years of age (Under 5 Mortality Rate), c) under 24 years old. (*)	CHILD
Selected Cause-Specific Mortality	Cause-specific mortality rates per 100,000 population for: a) Infectious diseases b) Congenital malformations c) Malignant neoplasms (cancers) d) Unintentional Injuries i. Burns ii. Poisoning iii. Transport accidents/road traffic injuries iv. Drowning e) Suicide f) Assault and homicide g) Perinatal causes by sex, in age-groups under 1, 1-4, 5-9, 10-14, 15-17, 18-24, and by socio-economic group when available. (*)	CHILD, NAACS, SDG 3.9.3
Abnormal BMI	Prevalence of under/over nutrition, among children and young people (aged 0-24) with BMI < 18.5, or with BMI > 25 (%) (*)	NAACS
Asthma	Prevalence of asthma, by gender, in age-groups 0-4, 5-9, 10-14, 15-17, 18-24, by socio-economic group (*)	CHILD
Dental Morbidity	Mean dmft (decayed, missing, and filled teeth) index for children and young people respectively (aged 5-24) (*)	CHILD

Domain: Poverty

Indicator	Title	Source
Inadequate Urban Housing	Proportion of children and young people in urban population living in slums, informal settlements or inadequate housing (*)	SDG 11.1.1

Poverty (National)	Proportion of children and young people (aged 0-24) living in poverty in all its dimensions according to national definitions (*)	SDG 1.2.2
Child Labour	Proportion and number of children aged 5-17 years engaged in child labour, by sex and age	SDG 8.7.1
Jobless Households	Share of persons aged 0-17 who are living in households where no-one works	Eurostat

Domain: Crime and Protection

Indicator	Title	Source
Child Abuse	Proportion of children aged 1-17 years who experienced any physical punishment and/or psychological aggression by caregivers in the past month	SDG 16.2.1
Early Age at Marriage/Union	Proportion of women aged 20-24 years who were married or in a union before age 15 and before age 18	SDG 5.3.1
Human Trafficking	Number of victims of human trafficking per 100,000 population, for those aged 0-24, by sex, and form of exploitation (*)	SDG 16.2.2
Female Partner Violence	Proportion of ever-partnered women and girls aged 15-24 who experienced any physical, sexual and/or emotional violence by a current or former intimate partner in past 12 months (*)	SDG 5.2.1
Sexual Violence	Proportion of young women and men aged 18-24 years who experienced sexual violence by age 18 (*)	SDG 16.2.3
Crime Victimization Rate	Percentage of victims of violence in the previous 12 months who reported their victimization to competent authorities	NAACS
Incarceration Rates	Proportion of people ages 13-17, 18-24 male or female, detained in residential placement	Life Course Metrics Project
Intentional Homicide	Intentional homicide: Number of homicide victims amongst those aged 0-24 per 100,000 population (i.e., homicide rates), by age and sex (and by mechanism and type of perpetrator, where possible) (*)	NAACS

Domain: Social Indicators

Indicator	Title	Source
Asylum Seekers	Rate of children and young people seeking asylum, alone or as part of a family, by sex, in age groups 0-4, 5-9, 10-14, 15-17, 18-24. (*)	CHILD
Access to Services	Proportion of population (aged 0-24) living in households with access to services, including access to public transport, by sex, and persons with disabilities (*)	SDG 1.4.1
Income	Proportion of people aged 15-24 living below 50 per cent of median income, by sex and persons with disabilities (*)	SDG 10.2.1
Birth Registration	Proportion of children under 5 years of age whose births have been registered with a civil authority, by age	SDG 16.9.1

Receipt of Child Benefit or Equivalent Payment	Percentage of children receiving a child or other social grant (*)	NAACS
Socio-Economic Circumstances	Percentage of children and young people living in households in each of the six socio-economic categories of upper non-manual, lower non-manual, skilled manual, unskilled manual, self-employed, and farmer, derived from the International Standard Classification of Occupations (ISCO) classification, and determined by resident with the highest occupation, in age groups 0-4, 5-9, 10-14, 15-17, 18-24. (*)	CHILD
Children in Care	Percentage of children who are under the care or formal supervision of statutory Social Welfare or Social Services agencies, by male, female and total, and age groups 0-4, 5-9, 10-14, 15-17.	CHILD

Dimension B: Education and Employment

Domain: Education

Indicator	Title	Source
Educational Aspiration	An aspirational indicator: How far in your education do you expect to go?	NAACS
Education Completion Rate	Completion rate for primary education, lower and upper secondary education, and tertiary education. (*)	NAACS
Early Childhood Education Rate	Percentage of children aged 3 and under 5 years enrolled in a Level 0 (pre-primary) education or kindergarten programme, by male, female and total, and by socio-economic group when available.	CHILD, SDG 4.2.2
School Drop-out Rate	Percentage of children who leave school (voluntarily or by exclusion) before the statutory school leaving age, by male, female and total.	CHILD
Early School Readiness	Parent reports of children's competence in four cognitive and early literacy school readiness skills: (1) recognizing all letters; (2) counting to 20 or higher; (3) writing his or her name; and (4) reading words in books	Child Trends
Educational Development	Percentage of population in age groups (under 15, 15-24) achieving at least a fixed level of proficiency in functional (a) literacy and (b) numeracy skills, by sex (*)	SDG 4.6.1
ICT skills	Proportion of children and young people with information and communications technology (ICT) skills, by type of skill (*)	SDG 4.4.1
Liking School	Percentage of school-aged children reporting to like school a lot (*)	HBSC
% Technical and Vocational Education and Training (TVET)	% of 15-24 year-olds enrolled in TVET (technical vocational education and training) (*)	NAACS

Domain: Employment

Indicator	Title	Source
% NEET	Proportion of youth (aged 15-24 years) not in education, employment or training	SDG 8.6.1
Income Equality	Average hourly earnings of female and male employees, by occupation, age and persons with disabilities	SDG 8.5.1
Unemployment Rate	Unemployment rate for those aged 15-24, by sex, and persons with disabilities. (*)	SDG 8.5.2
Financial Literacy and Savings	% of adolescents and young people (aged 15-24) with financial literacy skills and ownership of savings	NAACS

Dimension C: Health-Related Behaviours

Domain: Lifestyle Determinants

Indicator	Title	Source
Alcohol Abuse	Alcohol use: % of adolescents/young people aged 13-24 who had at least one alcoholic drink on at least one or more days during the past 30 days (*)	NAACS
Eating Behaviours	Drinking soft drinks and sweets every day (%) (*)	HBSC
Eating Behaviours	Eating breakfast every school day (%) (*)	HBSC
Eating Behaviours	Eating fruit and vegetables every day (%) (*)	HBSC
Leisure Activity	% of children and young people who participate in recreational, social or leisure activities for a specified time during the day/week (*)	NAACS
Oral Health	Brushing teeth more than once a day (%)(*)	HBSC
Physical Activity	Percentage of children and young people reporting that that they undertake vigorous activity for at least two hours a week, by sex, age and by socioeconomic group when available. (*)	CHILD
Sedentary Behaviour, Watching Television and Screen Time	Watch television for two or more hours on weekdays (%) (*)	HBSC
Substance Misuse	Percentage of children and young people (aged 15-24) who report that they have: (a) used cannabis more than twice during the last 30 days; (b) ever used heroin; and (c) ever used ecstasy, by sex and by socio-economic group when available. (*)	CHILD
Tobacco Smoking	% of adolescents and young people aged 13-24 who have smoked at least one cigarette or more in the past 30 days (*)	NAACS / HBSC

Domain: Disability and Injury

Indicator	Title	Source
Disability Rate	Percentage of population aged 0-24 (by sex and ethnic minority) reporting some form of disability (*)	UNICEF
Hospital Admissions Due to Injury	Annual rate of hospital inpatient admissions, by sex, age groups (0-4, 5-9, 10-14, 15-19, 20-24), and socio-economic group when available, per 100,000 population, for a) burns, b) fracture of long-bones defined by specific ICD10 code, and c) poisoning (*)	CHILD

Domain: Mental Health

Indicator	Title	Source
Attempted to Suicide	Annual incidence of attempted suicide, defined by inpatient hospital stays with a discharge diagnosis of attempted suicide, per 100,000 population, by sex, age-groups 10-14, 15-17, 18-24, and by socio-economic group when available. (*)	CHILD
Feeling of Loneliness	Most of the time or always felt lonely during the past 12 months (%) (*)	GSHS
Life Satisfaction	High Satisfaction with life (%) (Cantril Ladder score of ≥6) (%) (*)	HBSC
Prevalence of Depression & Anxiety	Prevalence of Depression/Anxiety in children and young people (*)	NAACS
Suicide Ideation and Attempts	Made a plan about how they would attempt suicide during the past 12 months (%) (*)	GSHS
Mental Health Service Use	Proportion of persons (aged 0-24) with a severe mental disorder (psychosis; bipolar affective disorder; moderate-severe depression) who are using services [%)(*)	Mental Health Atlas

Domain: Parental Determinants and Relationships

Indicator	Title	Source
Breastfeeding	Percentage of children breastfed at a) hospital discharge or immediately after birth, b) 6 months, c) 12 months (*)	CHILD
Child in Single Parent Households	Percentage of children who live in family household units with only one parent or primary caregiver resident, by male, female, and total, in age groups 0-4, 5-9, 10-14, 15-17.	CHILD
Parental Educational Attainment	Percentage whose current “mother” had attained Elementary / Lower Secondary / Upper Secondary/ Tertiary education, as a percentage of all children and young people in the age groups 0-4, 5-9, 10-14, 15-17, 18-24. (*)	CHILD
Parent–Child Communication	Percentage of children and young people who report that they find it easy or very easy to talk with their parents when something is really bothering them (*)	CHILD/HBSC

Being Bullied or Bullying Others	Being a victim of bullying or bullying others at school at least twice in the past couple of months (%) (*)	HBSC
Close Friendships	Percentage of adolescents and young people who have three or more close friends of the same gender (*)	HBSC
Electronic Media Contact	Percentage of adolescents and young people who make daily Electronic Media Contact with friends (*)	HBSC

Domain: Reproductive and Sexual Health

Indicator	Title	Source
Adolescent Birth Rate	Annual number of births (aged 10-14, 15-19 years) per 1,000 adolescent females in that age group	SDG 3.7.2
Age at First Intercourse	Mean age of first intercourse, (for those aged 15-24) (*)	NAACS, HBSC
Condom Use	The proportion of adolescents and young people aged 15-24 with one or more partner in the last 12 months who report condom use in their last intercourse (*)	NAACS
Contraceptive Use	Contraception (met need): % of adolescents and young people who are sexually active and who have their need for contraception satisfied with modern methods (*)	NAACS
Women Informed Decisions	Proportion of women aged 15-24 years who make their own informed decisions regarding sexual relations, contraceptive use and reproductive health care (*)	SDG 5.6.1
Abortion Rate	Percent of pregnancies to 15 to 24 year olds ending in legal abortion (*)	Child Trends
Children and Young People AIDS Incidence Rate	Number of Newly Diagnosed AIDS Cases Among Children and Young People by age groups; under 13, 13-19, 20-24 (*)	Child Trends
Sexually Transmitted Infections (STIs)	Rate of Chlamydia, Gonnorrhea, and Syphillis among young adults ages 15 to 24 (*)	Child Trends

Dimension D: Health System and Policy

Domain: Health and Social Policies

Indicator	Title	Source
Gender Equality	Number of countries with laws and regulations that guarantee women aged 15-24 years access to sexual and reproductive health care, information and education (*)	SDG 5.6.2
Marginalised Groups Health Care	Is it national policy that all children and young people (aged 0-24) in the following groups have access to both immunisation and to non-emergency diagnostic investigations comparable to that offered the general resident child population? a) Asylum seekers b) Children of illegal immigrants / illegal residents c) Homeless children d) Culturally itinerant children (gypsies, Romany, etc.) (*)	CHILD

Anti-Bullying Policies in Schools	Percentage of children attending schools with a written anti-bullying policy in operation, as a percentage of all school children.	CHILD
Physical Punishment	Percentage of children and young people protected by law against physical punishment, expressed as a percentage of the national population (aged 0-24) (*)	CHILD
Mental Health Policy	Existence of a national policy/plan for mental health that is in line with international and regional human rights instruments	Mental Health Atlas
Migration Policy	Number of countries that have implemented well-managed migration policies	SDG 10.7.2

Domain: Disability

Indicator	Title	Source
Education Facilities	Percentage of schools with adapted infrastructure and materials for students with disabilities	CDC
Integration of People with Disabilities in Schools	Proportion of school-age disabled children attending mainstream schools	IDEE
Integration of People with Disabilities into Employment	Employment rate of disabled women and men aged 18-24, compared to general population (*)	IDEE
Teacher Education	Percentage of teachers in service who have received in-service training in the last 12 months to teach students with special educational needs	CDC

Domain: Environment

Indicator	Title	Source
Exposure to Air Pollution	Percentage of children and young people aged 0-24 living in localities with an annual mean concentration of > 40 ppm of PM10. (*)	CHILD
Provision of Public Spaces	Average share of the built-up area of cities that is open space for public use for all, by sex, age and persons with disabilities	SDG 11.7.1
Transportation Safety	Existence and actual enforcement of legislation and regulations establishing mandatory requirements for safe mobility and transport for children and young people. (*)	CHILD
Environmental Tobacco Smoke	Existence and enforcement of laws and regulations aimed at protecting children and young people from exposure to environmental tobacco smoke in public places. (*)	CHILD
Exposure to Hazardous Noise	Existence of policies aimed at assessing and reducing the exposure of babies and young children to potentially harmful noise in ICU units, day-care centres, schools and kindergartens.	CHILD

Exposure to Lead	Existence of legislation and regulations that limit the use of lead in building and decorating materials and establish bio-monitoring of babies and children at high risk.	CHILD

Domain: Health Systems Quality

Indicator	Title	Source
Parental Inpatient Accompaniment	Percentage of inpatient bed days of children aged under 16 occurring in hospitals where accompanying by 'parents' day and night is offered, as a percentage of all bed days for this age-group.	CHILD
Immunisation Coverage	Immunisation rates for childhood immunisation, expressed as children aged 24-35 months inclusive having completed primary courses of immunisation as a percentage of all children in that age-group, separately for the following antigens: diphtheria, pertussis, tetanus, poliomyelitis, haemophilus influenza type b, measles, mumps, rubella, hepatitis B, meningococcus C.	CHILD
Leukaemia 5-year Survival	Five-year survival rate for acute lymphatic leukaemia, in age-groups at diagnosis 0-4; 5-9; 10-14; 15-19, 20-24. (*)	CHILD

Domain: Participation and Engagement

Indicator	Title	Source
Participation in Decisions	Proportion of population who believe decision-making is inclusive and responsive, by sex, age, disability and population group	SDG 16.7.2
Trust	% of 13-year-old students endorsing values and attitudes promoting equality, trust and participation in governance	NAACS
Union Membership	Participation by adolescents and young people (aged 15-24) in labour unions or associations (*)	NACCS
Volunteering	An indicator on volunteerism (e.g. % of adolescents and young people who volunteered at least once in the past month) (*)	NACCS

(*) = Adapted title

Appendix E: Round One Delphi Questionnaire

BRIDGE Health

Delphi Study: Round One

Welcome to the first round of the eDelphi consensus process.
Thank you for agreeing to be a member of our panel to identify a core set of indicators to be used to monitor the health and well-being of children and young people's (aged 0 to 24) across Europe. In this phase, we are trying to establish a consensus on a set of about 30 indicators, of greatest value in measuring child and young peoples' health and well-being. Please think carefully about the most important indicators, and do not hesitate to score down those you think are of less importance. This process is your opportunity to give your views. We hope that you will find it an engaging and enjoyable experience. Please draw on your own personal and professional experience, as well as any knowledge that you have of current, relevant research evidence. The study is being led by Sara McQuinn and Prof. Anthony Staines from Dublin City University (DCU), Ireland, and is part of a wider European project, BRIDGE Health, which aims to prepare the transition towards a sustainable and integrated EU health information system for both public health and research purposes.

There are 94 proposed indicators for you to consider. The overall structure is adapted from the Child Project. Individual indicators come from several different sources including the Child project, WHO, the SDG's, HBSC, UNICEF, Child Trends, and others. The language, definitions and age ranges of the indicators chosen are largely given as in the original source. They may well require some modification for use, and our hope is that they can be future adapted to fit the needs of individual countries, and of Europe. Click here to download an Excel spreadhseet with more details on the indicator selection process (http://www.astaines.eu/docs/Delphi/Methodology_Indicators%20Selection%20Process.xlsx) .

This project has suggested that indicators are divided into four dimensions. Within these similar indicators are grouped together into a number of domains.

We encourage you to answer the questions about all four dimensions. However, if you do not feel able to comment on one of these dimensions, you can choose to skip it, and move on to the next dimension.

* Dimension A: Demographic and Socio-Economic
* Dimension B: Education and Employment
* Dimension C: Health-related Behaviours
* Dimension D: Health System and Policy

Please note that your responses to this survey are anonymous and your participation will be kept strictly confidential. I agree to take part in this survey

- ❍ Yes
- ❍ No

Please identify which region you live in?

- ❍ Europe
  a) In what country in Europe are you based?
- ❍ Asia
- ❍ Africa
- ❍ the Americas
- ❍ Oceania

What do you work as?

- ❍ Advocate
- ❍ Clinician
- ❍ Epidemiologist
- ❍ Health Promotion Officer
- ❍ Health Policy Advisor
- ❍ Paediatrician
- ❍ Project Manager
- ❍ Researcher
- ❍ Statistician
- ❍ Student
- ❍ Other

What type of organization do you work for?

- ❍ International Organization
- ❍ National Government
- ❍ Regional Government
- ❍ Health Care Provider
- ❍ Research Project
- ❍ Voluntary Organisation
- ❍ Media
- ❍ University/Third Level Institution
- ❍ Private Practice
- ❍ Other

A. Demographic and Socio-Economic

This dimension includes the demographic distribution of children and young people, in addition to some specific indicators on socio-economic factors that are health determinants.

The proposed indicators are divided into four sub-domains:

Mortality and Morbidity
Poverty
Crime and Protection
Social Indicators

I would be happy to review the indicators in this dimension:

- ❍ Yes, answer this dimension
- ❍ No, skip to the next dimension

Domain: Mortality and Morbidity

Please tell us how important you think each of these indicators is to measure the health and well-being of children and young people in your country:

	Not at all Important	Not Important	Neither Important or Unimportant	Important	Very Important
Total Mortality Rates Total Mortality Rate, by sex and socio-economic group, when available, for; a) Infant Mortality Rate (between birth and exactly one year of age) b) Under 5 Mortality Rate (between birth and exactly five years of age) c) Under 24 years old.	❍	❍	❍	❍	❍
Selected Cause-Specific Mortality Cause-specific mortality rates per 100,000 population by sex, in age groups under 1, 1-4, 5-9, 10-14, 15-17, 18-24, and by socio-economic group when available, for: a) Infectious diseases b) Congenital malformations c) Malignant neoplasms (cancers) d) Unintentional Injuries i. Burns ii. Poisoning iii. Transport accidents/road traffic injuries iv. Drowning e) Suicide f) Assault and homicide g) Perinatal causes	❍	❍	❍	❍	❍
Asthma Prevalence of asthma, by gender, in age-groups 0-4, 5-9, 10-14, 15-17, 18-24, by socio-economic group.	❍	❍	❍	❍	❍
Infectious Disease Annual incidence per 100,000 population of measles, bacterial meningitis, tuberculosis in age groups 0-4, 5-9, 10-14, 15-17, 18-24, by socio-economic group	❍	❍	❍	❍	❍
Dental Morbidity Mean dmft (decayed, missing, and filled teeth) index for children and young people respectively (aged 5-24)	❍	❍	❍	❍	❍

Abnormal BMI Prevalence of under/over nutrition, among children and young people (aged 0-24) with BMI < 18.5, or with BMI > 25 (%)	❍	❍	❍	❍	❍

Please drag and drop these indicators to arrange them in order of priority:

_____ Total Mortality Rates
_____ Selected Cause-Specific Mortality
_____ Asthma
_____ Infectious Disease
_____ Dental Morbidity
_____ Abnormal BMI

Domain: Poverty

Please tell us how important you think each of these indicators is to measure the health and well-being of children and young people in your country:

	Not at all Important	Not Important	Neither Important or Unimportant	Important	Very Important
Poverty (National) Proportion of children and young people (aged 0-24) living in poverty in all its dimensions according to national definitions	❍	❍	❍	❍	❍
Jobless Households Share of persons aged 0-17 who are living in households where no-one works	❍	❍	❍	❍	❍
Inadequate Urban Housing Proportion of children and young people in urban population living in slums, informal settlements or inadequate housing	❍	❍	❍	❍	❍
Child Labour Proportion and number of children aged 5- 17 years engaged in child labour, by sex and age	❍	❍	❍	❍	❍

Please drag and drop these indicators to arrange them in order of priority:

_____ Poverty (National)
_____ Child Labour
_____ Jobless Households
_____ Inadequate Urban Housing

Domain: Crime and Protection

Please tell us how important you think each of these indicators is to measure the health and well-being of children and young people in your country:

	Not at all Important	Not Important	Neither Important or Unimportant	Important	Very Important
Incarceration Rates Proportion of people aged 13-17, 18-24 male or female, detained in residential placement	❍	❍	❍	❍	❍
Crime Victimization Rate Percentage of victims of violence in the previous 12 months who reported their victimization to competent authorities	❍	❍	❍	❍	❍
Intentional Homicide Number of homicide victims amongst those aged 0-24 per 100,000 population (i.e., homicide rates), by age and sex (and by mechanism and type of perpetrator, where possible)	❍	❍	❍	❍	❍
Child Abuse Proportion of children aged 1-17 years who experienced any physical punishment and/or psychological aggression by caregivers in the past month	❍	❍	❍	❍	❍
Sexual Violence Proportion of young women and men aged 18-24 years who experienced sexual violence by age 18	❍	❍	❍	❍	❍
Early Age at Marriage/Union Proportion of women aged 20-24 years who were married or in a union before age 15 and before age 18	❍	❍	❍	❍	❍

Female Partner Violence Proportion of ever-partnered women and girls aged 15-24 who experienced any physical, sexual and/or emotional violence by a current or former intimate partner in past 12 months	❍	❍	❍	❍	❍
Human Trafficking Number of victims of human trafficking per 100,000 population, for those aged 0-24, by sex, and form of exploitation	❍	❍	❍	❍	❍

Please drag and drop these indicators to arrange them in order of priority:

_____ Child Abuse
_____ Early Age at Marriage/Union
_____ Human Trafficking
_____ Female Partner Violence
_____ Sexual Violence
_____ Crime Victimisation Rate
_____ Incarceration Rates
_____ Intentional Homicide

Domain: Social Indicators

Please tell us how important you think each of these indicators is to measure the health and well-being of children and young people in your country:

	Not at all Important	Not important	Neither important or unimportant	Important	Very Important
Birth Registration Proportion of children under 5 years of age whose births have been registered with a civil authority, by age	❍	❍	❍	❍	❍
Socio-Economic Circumstances Percentage of children and young people living in households in each of the six socio-economic categories of upper non-manual, lower non-manual, skilled manual, unskilled manual, self-employed, and farmer, derived from the International Standard Classification of Occupations (ISCO) classification, and determined by resident with the highest occupation, in age groups 0-4, 5-9, 10-14, 15-17, 18-24.	❍	❍	❍	❍	❍
Receipt of Child Benefit or Equivalent Payment Percentage of children receiving a child or other social grant	❍	❍	❍	❍	❍
Children in Care Percentage of children who are under the care or formal supervision of statutory Social Welfare or Social Services agencies, by sex and age groups 0-4, 5-9, 10-14, 15-17.	❍	❍	❍	❍	❍
Access to Services Proportion of population (aged 0-24) living in households with access to services, including access to public transport, by sex, and persons with disabilities	❍	❍	❍	❍	❍

Asylum Seekers Rate of children and young people seeking asylum, alone or as part of a family, by sex, in age groups 0-4, 5-9, 10-14, 15-17, 18-24.	❍	❍	❍	❍	❍
Income Proportion of people aged 15-24 living below 50% of median income, by sex and persons with disabilities	❍	❍	❍	❍	❍

Please drag and drop these indicators to arrange them in order of priority:

_____ Access to Services
_____ Income
_____ Asylum Seekers
_____ Birth Registration
_____ Receipt of Child Benefit or Equivalent Payment
_____ Socio-Economic Circumstances
_____ Children in Care

Balance and Coherence of this Dimension

Thinking about the indicators listed above, across all four domains, do you think the proposed indicator set presents a complete picture of the demographic and socio-economic determinants impacting the health and well-being of children and young people in Europe?

- ❑ Yes
- ❑ No

If no, please explain how you would make the set of indicators more balanced or coherent:

B. Education and Employment

The transition into education, training, and work are important stages to children and young people's development, and in turn their health and well-being.
The proposed indicators are divided into two sub-domains;

Education
Employment

I would be happy to review the indicators in this dimension.

- ❍ Yes, answer this dimension
- ❍ No, skip to the next dimension

Domain: Education

Please tell us how important you think each of these indicators is to measure the health and well-being of children and young people in your country:

	Not at all important	Not Important	Neither important or unimportant	Important	Very Important
Early Childhood Education Rate Percentage of children aged 3 and under 5 years enrolled in a Level 0 (pre-primary) education or kindergarten programme, by sex and by socio-economic group when available.	❍	❍	❍	❍	❍
Early School Readiness Parent reports of children's competence in four cognitive and early literacy school readiness skills: (1) recognizing all letters; (2) counting to 20 or higher; (3) writing his or her name; and (4) reading words in books	❍	❍	❍	❍	❍
Educational Development Percentage of population in age groups (under 15, 15-24) achieving at least a fixed level of proficiency in functional (a) literacy and (b) numeracy skills, by sex	❍	❍	❍	❍	❍
Liking School Percentage of school-aged children reporting to like school a lot	❍	❍	❍	❍	❍
Educational Aspiration An aspirational indicator: How far in your education do you expect to go?	❍	❍	❍	❍	❍
Education Completion Rate The completion rate for primary education, lower and upper secondary education, and tertiary education.	❍	❍	❍	❍	❍

School Drop-out Rate Percentage of children who leave school (voluntarily or by exclusion) before the statutory school leaving age, by sex.	❍	❍	❍	❍	❍
ICT skills Proportion of children and young people with information and communications technology (ICT) skills, by type of skill	❍	❍	❍	❍	❍
% TVET Proportion of 15-24 year-olds enrolled in TVET (technical vocational education and training)	❍	❍	❍	❍	❍

Please drag and drop these indicators to arrange them in order of priority:

_____ Educational Aspiration
_____ Education Completion Rate
_____ Early Childhood Education Rate
_____ School Drop-out Rate
_____ Early School Readiness
_____ Educational Development
_____ ICT skills
_____ Liking School
_____ % TVET

Domain: Employment

Please tell us how important you think each of these indicators is to measure the health and well-being of children and young people in your country:

	Not at all Important	Not important	Neither important or unimportant	Important	Very Important
Unemployment Rate Unemployment Rate for those aged 15-24, by sex, and persons with disabilities.	❍	❍	❍	❍	❍
% NEET Proportion of youth (aged 15-24 years) not in education, employment or training	❍	❍	❍	❍	❍
Income Equality: Average hourly earnings of female and male employees, by occupation, age and persons with disabilities	❍	❍	❍	❍	❍
Financial Literacy and Savings: Proportion of adolescents and young people (aged 15-24) with financial literacy skills and ownership of savings	❍	❍	❍	❍	❍

Please drag and drop these indicators to arrange them in order of priority:

_____ Income Equality
_____ % NEET
_____ Unemployment Rate
_____ Financial Literacy and Savings

Balance and Coherence of this Dimension

Thinking about the indicators listed above across both domains, do you think the proposed indicator set presents a complete picture of the education and employment determinants impacting the health and well-being of children and young people in Europe?

- ❍ Yes
- ❍ No

If no, please explain how you would make the set of indicators more balanced or coherent:

C. Health-Related Behaviours

Parents, children themselves, and other influences all contribute to the factors which determine health and well-being. We have identified indicators relating to nutrition, lifestyle, sexual health, and other identified factors.
The proposed indicators are divided into five sub-domains:

Lifestyle Determinants
Disability and Injuries
Mental Health
Parental Determinants and Relationships
Reproductive and Sexual Health

I would be happy to review the indicators in this dimension

- ❍ Yes, answer this dimension
- ❍ No, skip to the next dimension

Domain: Lifestyle Determinants

Please tell us how important you think each of these indicators is to measure the health and well-being of children and young people in your country:

	Not at all Important	Not important	Neither important or unimportant	Important	Very Important
Alcohol Abuse Proportion of adolescents/young people aged 13-24 who had at least one alcoholic drink on at least one or more days during the past 30 days	❍	❍	❍	❍	❍
Tobacco Smoking Proportion of adolescents and young people aged 13-24 who have smoked at least one cigarette or more in the past 30 days	❍	❍	❍	❍	❍
Substance Misuse Proportion of children and young people (aged 15-24), by sex and by socio-economic group when available. who report that they have: (a) used cannabis more than twice during the last 30 days; (b) ever used heroin; and (c) ever used ecstasy,	❍	❍	❍	❍	❍
Physical Activity Proportion of children and young people reporting that they undertake a vigorous activity for at least two hours a week, by sex, age and by socioeconomic group when available.	❍	❍	❍	❍	❍
Sedentary Behaviour, Watching Television and Screen Time Watch television for two or more hours on weekdays (%)	❍	❍	❍	❍	❍
Leisure Activity Proportion of children and young people who participate in recreational, social or leisure activities for a specified time during the day/week	❍	❍	❍	❍	❍
Eating Behaviours Drinking soft drinks and sweets every day (%)	❍	❍	❍	❍	❍

Eating Behaviours Eating breakfast every school day (%)	❍	❍	❍	❍	❍
Eating Behaviours Eating fruit and vegetables every day (%)	❍	❍	❍	❍	❍
Oral Health Brushing teeth more than once a day (%)	❍	❍	❍	❍	❍

Please drag and drop these indicators to arrange them in order of priority:

_____ Alcohol Abuse
_____ Eating Behaviours; Soft drinks and Sweets
_____ Eating Behaviours; Breakfast
_____ Eating Behaviours; Fruit and Vegetables
_____ Leisure Activity
_____ Oral Health
_____ Physical Activity
_____ Sedentary Behaviour, Watching Television and Screen Time
_____ Substance Misuse
_____ Tobacco Smoking

Domain: Disability and Injuries

Please tell us how important you think each of these indicators is to measure the health and well-being of children and young people in your country:

	Not at all Important	Not important	Neither important or unimportant	Important	Very Important
Disability Rate: Proportion of population aged 0-24 (by sex and ethnic minority) reporting some form of disability	❍	❍	❍	❍	❍
Hospital Admissions Due to Injury: Annual rate of hospital inpatient admissions, by sex, age groups (0-4, 5-9, 10-14, 15-19, 20-24), and socio-economic group when available, per 100,000 population, for a) Burns b) Fracture of long-bones defined by specific ICD10 code, and c) Poisoning	❍	❍	❍	❍	❍

Please drag and drop these indicators to arrange them in order of priority:

_____ Disability Rate

_____ Hospital Admissions Due to Injury

Domain: Mental Health

Please tell us how important you think each of these indicators is to measure the health and well-being of children and young people in your country:

	Not at all Important	Not important	Neither important or unimportamt	Important	Very Important
Life Satisfaction High Satisfaction with life (%) (Cantril Ladder score of ≥6)	❍	❍	❍	❍	❍
Prevalence of Depression & Anxiety Prevalence of Depression/Anxiety in children and young people	❍	❍	❍	❍	❍
Feeling of Loneliness Most of the time or always felt lonely during the past 12 months (%)	❍	❍	❍	❍	❍
Suicide Ideation and Attempts: Made a plan about how they would attempt suicide during the past 12 months (%)	❍	❍	❍	❍	❍
Attempted to Suicide: Annual incidence of attempted suicide, defined by inpatient hospital stays with a discharge diagnosis of attempted suicide, per 100,000 population, by sex, age-groups 10-14, 15-17, 18-24, and by socio-economic group when available.	❍	❍	❍	❍	❍
Mental Health Service Use Proportion of persons (aged 0-24) with a severe mental disorder (psychosis; bipolar affective disorder; moderate-severe depression) who are using services (%)	❍	❍	❍	❍	❍

Please drag and drop these indicators to arrange them in order of priority:

_____ Attempted to Suicide
_____ Feeling of Loneliness
_____ Life Satisfaction
_____ Prevalence of Depression & Anxiety
_____ Suicide Ideation and Attempts
_____ Mental Health Service Use

Domain: Parental Determinants and Relationships

Please tell us how important you think each of these indicators is to measure the health and well-being of children and young people in your country:

	Not at all Important	Not important	Neither important or unimportant	Important	Very Important
Breastfeeding Percentage of children breastfed at a) Hospital discharge or immediately after birth, b) 6 months, c) 12 months	❍	❍	❍	❍	❍
Child in Single Parent Households Percentage of children who live in family household units with only one parent or primary caregiver-resident, by male, female, and total, in age groups 0-4, 5-9, 10-14, 15-17.	❍	❍	❍	❍	❍
Parental Educational Attainment Percentage whose current "mother" had attained Elementary / Lower Secondary / Upper Secondary/ Tertiary education, as a percentage of all children and young people in the age groups 0-4, 5-9, 10-14, 15-17, 18-24.	❍	❍	❍	❍	❍
Parent–Child Communication Percentage of children and young people who report that they find it easy or very easy to talk with their parents when something is really bothering them.	❍	❍	❍	❍	❍
Close Friendships Percentage of adolescents and young people who have three or more close friends of the same gender	❍	❍	❍	❍	❍
Electronic Media Contact Percentage of adolescents and young people who make daily Electronic Media Contact with friends	❍	❍	❍	❍	❍

Being Bullied or Bullying Others Being a victim of bullying or bullying others at school at least twice in the past couple of months (%)	❍	❍	❍	❍	❍

Please drag and drop these indicators to arrange them in order of priority:

_____ Breastfeeding
_____ Child in Single Parent Households
_____ Parental Educational Attainment
_____ Parent–Child Communication
_____ Being Bullied or Bullying Others
_____ Close Friendships
_____ Electronic Media Contact

Domain: Reproductive and Sexual Health

Please tell us how important you think each of these indicators is to measure the health and well-being of children and young people in your country:

	Not at all Important	Not important	Neither important or unimportant	Important	Very Important
Adolescent Birth Rate Annual number of births (aged 10-14, 15-19 years) per 1,000 adolescent females in that age group	❍	❍	❍	❍	❍
Age at First Intercourse Mean age of first intercourse, (for those aged 15-24)	❍	❍	❍	❍	❍
Contraceptive Use Contraception (met need): % of adolescents and young people who are sexually active and who have their need for contraception satisfied with modern methods	❍	❍	❍	❍	❍
Condom Use The proportion of adolescents and young people aged 15-24 with one or more partner in the last 12 months who report condom use in their last intercourse	❍	❍	❍	❍	❍
Women Informed Decisions Proportion of women aged 15-24 years who make their own informed decisions regarding sexual relations, contraceptive use and reproductive health care	❍	❍	❍	❍	❍
Abortion Rate Proportion of pregnancies in 15 to 24 year olds ending in legal abortion	❍	❍	❍	❍	❍
Children and Young People AIDS Incidence Rate Number of Newly Diagnosed AIDS Cases Among Children and Young People by age groups; under 13, 13-19, 20-24	❍	❍	❍	❍	❍

Sexually Transmitted Infections (STIs) Rate of Chlamydia, Gonorrhea, and Syphilis among young adults ages 15 to 24	❍	❍	❍	❍	❍

Please drag and drop these indicators to arrange them in order of priority:

_____ Adolescent Birth Rate
_____ Age at First Intercourse
_____ Condom Use
_____ Contraceptive Use
_____ Women Informed Decisions
_____ Abortion Rate
_____ Children and Young People AIDS Incidence Rate
_____ Sexually Transmitted Infections (STIs)

Balance and Coherence of this Dimension

Thinking about the indicators listed above, across all five domains, do you think the proposed indicator set presents a complete picture of the health-related behaviour determinants impacting the health and well-being of children and young people in Europe?

- ❍ Yes
- ❍ No

If no, please explain how you would make the set of indicators more balanced or coherent:

D. Health Systems and Policy

Health systems and their quality are important in protecting and promoting the health and well-being of children and young people. As children cannot be their own advocates in all social and other respects, legally backed policies and services are important in key areas, and we recommend indicators on several.
The indicators are divided into five sub-domains:

Health and Social Policy
Disability
Environment
Health System Quality
Participation and Engagement

I am happy to review the indicators in this dimension:

- ❍ Yes, answer this dimension
- ❍ No, end survey

Domain: Health and Social Policy

Please tell us how important you think each of these indicators is to measure the health and well-being of children and young people in your country:

	Not at all Important	Not important	Neither important or unimportant	Important	Very Important
Health Care for Marginalized Groups Is it national policy that all children and young people (aged 0-24) in the following groups to have access to both immunization and to non-emergency diagnostic investigations comparable to that offered the general resident child population? (a. Asylum seekers, b. children of illegal immigrants/illegal residents, c. homeless children, d.culturally itinerant children (gypsies, Romany, etc.))	❍	❍	❍	❍	❍
Migration Policy Number of countries that have implemented well-managed migration policies	❍	❍	❍	❍	❍
Anti-Bullying Policies in Schools Percentage of children attending schools with a written anti-bullying policy in operation, as a percentage of all school children.	❍	❍	❍	❍	❍
Physical Punishment Percentage of children and young people protected by law against physical punishment, expressed as a percentage of the national population (aged 0-24)	❍	❍	❍	❍	❍
Mental Health Policy Existence of a national policy/plan for mental health that is in line with international and regional human rights instruments	❍	❍	❍	❍	❍

Gender Equality: Number of countries with laws and regulations that guarantee women aged 15-24 years access to sexual and reproductive health care, information and education	❍	❍	❍	❍	❍

Please drag and drop these indicators to arrange them in order of priority:

_____ Gender Equality
_____ Mental Health Policy
_____ Anti-Bullying Policies in Schools
_____ Migration Policy
_____ Health Care for Marginalised Groups
_____ Physical Punishment

Domain: Disability

Please tell us how important you think each of these indicators is to measuring the health and well-being of children and young people in your country:

	Not at all Important	Not important	Neither important or unimportant	Important	Very Important
Education Facilities: Percentage of schools with adapted infrastructure and materials for students with disabilities	❍	❍	❍	❍	❍
Teacher Education: Percentage of teachers in service who have received in-service training in the last 12 months to teach students with special educational needs	❍	❍	❍	❍	❍
Integration of People with Disabilities in Schools Proportion of school-age disabled children attending mainstream schools	❍	❍	❍	❍	❍
Integration of People with Disabilities into Employment Employment rate of disabled women and men aged 18-24, compared to general population	❍	❍	❍	❍	❍

Please drag and drop these indicators to arrange them in order of priority:

_____ Education Facilities
_____ Integration of People with Disabilities in Schools
_____ Integration of People with Disabilities into Employment
_____ Teacher Education

Domain: Environment

Please tell us how important you think each of these indicators is to measure the health and well-being of children and young people in your country:

	Not at all Important	Not important	Neither important or unimportant	Important	Very Important
Exposure to Air Pollution Percentage of children and young people aged 0-24 living in localities with an annual mean concentration of > 40 ppm of PM10.	❍	❍	❍	❍	❍
Exposure to Lead The existence of legislation and regulations that limit the use of lead in building and decorating materials and establish bio-monitoring of babies and children at high risk.	❍	❍	❍	❍	❍
Exposure to Hazardous Noise The existence of policies aimed at assessing and reducing the exposure of babies and young children to potentially harmful noise in ICU units, day-care centres, schools, and kindergartens.	❍	❍	❍	❍	❍
Environmental Tobacco Smoke Existence and enforcement of laws and regulations aimed at protecting children and young people from exposure to environmental tobacco smoke in public places.	❍	❍	❍	❍	❍
Transportation Safety: Existence and actual enforcement of legislation and regulations establishing mandatory requirements for safe mobility and transport for children and young people.	❍	❍	❍	❍	❍

Provision of Public Spaces Average share of the built-up area of cities that is open space for public use for all, by sex, age and persons with disabilities	❍	❍	❍	❍	❍

Please drag and drop these indicators to arrange them in order of priority:

_____ Exposure to Air Pollution
_____ Provision of Public Spaces
_____ Transportation Safety
_____ Environmental Tobacco Smoke
_____ Exposure to Hazardous Noise
_____ Exposure to Lead

Domain: Health System Quality

Please tell us how important you think each of these indicators is to measure the health and well-being of children and young people in your country:

	Not at all Important	Not important	Neither important or unimportant	Important	Very Important
Parental Inpatient Accompaniment Percentage of inpatient bed days of children aged under 16 occurring in hospitals where accompanying by 'Parents' Day and night is offered, as a percentage of all bed days for this age group.	❍	❍	❍	❍	❍
Immunisation Coverage Immunisation rates for childhood immunisation, expressed as children aged 24-35 months inclusive having completed primary courses of immunisation as a percentage of all children in that age-group, separately for the following antigens: diphtheria, pertussis, tetanus, poliomyelitis, Haemophilus influenza type b, measles, mumps, rubella, hepatitis B, meningococcus C.	❍	❍	❍	❍	❍
Leukaemia 5-year Survival : Five year survival rate for acute lymphatic leukaemia, in age-groups at diagnosis 0-4; 5-9; 10-14; 15-19, 20-24.	❍	❍	❍	❍	❍

Please drag and drop these indicators to arrange them in order of priority:

_____ Parental Inpatient Accompaniment
_____ Immunisation Coverage
_____ Leukaemia 5-year Survival

Domain: Participation and Engagement

Please tell us how important you think each of these indicators is to measure the health and well-being of children and young people in your country:

	Not at all Important	Not important	Neither important or unimportant	Important	Very Important
Participation in Decisions Proportion of population who believe decision-making is inclusive and responsive, by sex, age, disability and population group	❍	❍	❍	❍	❍
Trust Proportion of 13-year-old students endorsing values and attitudes promoting equality, trust and participation in governance	❍	❍	❍	❍	❍
Union Membership Participation by adolescents and young people (aged 15-24) in labour unions or associations	❍	❍	❍	❍	❍
Volunteering % of adolescents and young people who volunteered at least once in the past month	❍	❍	❍	❍	❍

Please drag and drop these indicators to arrange them in order of priority:

_____ Participation in Decisions
_____ Trust
_____ Union Membership
_____ Volunteering

Balance and Coherence of this Dimension

Thinking about the indicators listed above, across all five domains, do you think the proposed indicator set presents a complete picture of the health system and policy determinants impacting the health and well-being of children and young people in Europe?

- ❍ Yes
- ❍ No

If no, please explain how you would make the set of indicators more balanced or coherent?

Thank you very much for taking part in Round One of the Delphi Study Process.
We appreciate your feedback.
If you would like to participate in Round Two, please click on the tab below to be re-directed.

Appendix F: Round Two Delphi Questionnaire

Delphi Study: Round Two

Welcome to the second round of the eDelphi consensus process.

Thank you for agreeing to remain a member of the panel to identify a core set of indicators to be used to monitor children and young people's health and well-being across Europe (aged 0-24).
In this phase, we are trying to establish a consensus on a set of around 15 to 20 indicators, picking those which exist, or can readily be collected, and are of greatest value in measuring child and young peoples' health and well-being.
Please think carefully about the most important indicators, and do not hesitate to score down those you think are of less importance.
This is your opportunity to give your views. We hope that you will find it an engaging and enjoyable experience.

Please draw on your own personal and professional experience, as well as your knowledge of current research and practice.
The study is being led by Sara McQuinn and Prof. Anthony Staines from Dublin City University (DCU), Ireland, and is part of the wider European project, BRIDGE Health.
A report of the first round may be downloaded from here.

BRIDGEHEALTH
BRidging Information and Data Generation for Evidence-based Health Policy and Research

In the last round, you were asked to score a set of 94 indicators by importance and to put them in rank order within 16 domains. You were also asked to comment on the balance of each dimension. We have taken careful note of your responses.
As a result, we have removed one domain - 'Disability and injuries' and placed the two indicators from that in the first domain - 'Mortality, Morbidity, and Disability'.

We have removed 3 indicators where there was a consensus that they ranked low within their domain and they were not scored as very important.

- Dental Morbidity
- % TVET
- Union Membership

And we have introduced 5 new indicators suggested by you:

- Internet Access in the Home

- Household Crowding
- Active Play
- Hospital-Treated Episodes of Deliberate Self-Harm
- Participation in Sports Clubs, Leisure Time and Youth Clubs/Associations or Cultural Organizations

Many general issues about indicators were flagged for concern. These included: -

measuring and reporting the distribution of the indicators within the population issues with different age ranges and terminology for the indicators additional instruments that can be used to measure certain indicators.
All of these will be addressed in our final report. However, we have deliberately chosen to take the definitions for each indicator from its original source with minimal or no modification. We are mainly interested in indicators that may already exist, and not in instruments, nor in making the indicators operational. Nonetheless, there is a need for further work on each of these issues.

As before the indicators are divided into four dimensions. Within each dimension, they are grouped into a number of domains. You have the option of skipping any dimension which you feel lies outside your area of interest and expertise.

Dimension A Demographic and Socio-Economic
Dimension B: Education and Employment
Dimension C: Health-related Behaviours
Dimension D: Health Systems and Policy

Please note that, as before, your responses to this survey are anonymous and your participation will be kept strictly confidential. Because the survey is anonymous, we will ask you for some demographic and professional details again.

I agree to take part in this survey

❍ Yes
❍ No

Please identify which region you live in?
❍ Europe
a) In what country in Europe are you based?
❍ Asia
❍ Africa
❍ the Americas
❍ Oceania

What do you work as?

- ❍ Advocate
- ❍ Clinician
- ❍ Epidemiologist
- ❍ Health Promotion Officer
- ❍ Health Policy Advisor
- ❍ Paediatrician
- ❍ Project Manager
- ❍ Researcher
- ❍ Statistician
- ❍ Student
- ❍ Other

What type of organization do you work for?

- ❍ International Organization
- ❍ National Government
- ❍ Regional Government
- ❍ Health Care Provider
- ❍ Research Project
- ❍ Voluntary Organisation
- ❍ Media
- ❍ University/Third Level Institution
- ❍ Private Practice
- ❍ Other

Dimension A: Demographic and Socio-Economic

This dimension includes the demographic distribution of children and young people, in addition to some specific indicators on socio-economic factors that are health determinants. The proposed indicators are divided into four sub-domains:

1. Mortality, Morbidity and Disability
2. Poverty
3. Crime and Protection
4. Social Indicators

I would be happy to review the indicators in this dimension:

- ❍ Yes, answer this dimension
- ❍ No, skip to the next dimension

Domain: Mortality, Morbidity, and Disability

We have moved two indicators, the disability rate measure, and the admission rate due to injury, to this dimension from the dimension Health Related Behaviours. Please rank them appropriately.

The indicators in this domain are listed in order of the priority given to them in the first round of the Delphi. If you disagree with this order, please re-arrange the indicators to the order you think is best, otherwise, leave them unchanged.

_____ 1) Total Mortality Rates; Total Mortality Rate, by sex and socio-economic group, when available, for; a) Infant Mortality Rate (between birth and exactly one year of age) b) Under 5 Mortality Rate (between birth and exactly five years of age) c) Under 24 years old.
_____ 2) Selected Cause-Specific Mortality; Cause-specific mortality rates per 100,000 population by sex, in age groups under 1, 1-4, 5-9, 10-14, 15-17, 18-24, and by socio-economic group when available, for: a) Infectious diseases b) Congenital malformations c) Malignant neoplasms (cancers) d) Unintentional Injuries i. Burns ii. Poisoning iii. Transport accidents/road traffic injuries iv. Drowning e) Suicide f) Assault and homicide g) Perinatal causes
_____ 3) Abnormal BMI; Prevalence of under/over nutrition, among children and young people (aged 0-24) with BMI < 18.5, or with BMI > 25 (%)
_____ 4) Disability Rate; Proportion of population aged 0-24 (by sex and ethnic minority) reporting some form of disability
_____ 5) Asthma; Prevalence of asthma, by gender, in age-groups 0-4, 5-9, 10-14, 15-17, 18-24, by socio-economic group.
_____ 6) Infectious Disease; Annual incidence per 100,000 population of measles, bacterial meningitis, tuberculosis in age groups 0-4, 5-9, 10-14, 15-17, 18-24, by socio-economic group
_____ 7) Hospital Admissions Due to Injury; Annual rate of hospital inpatient admissions, by sex, age groups (0-4, 5-9, 10-14, 15-19, 20-24), and socio-economic group when

available, per 100,000 population, fora) Burns b) Fracture of long-bones defined by specific ICD10 code, and c) Poisoning

To your knowledge, in your country, ...

	Is this indicator easily available?			If not, do you think it could easily be made available?	
	Yes	No	I Don't Know	Yes	No
Total Mortality Rates	❍	❍	❍	❍	❍
Selected Cause-Specific Mortality	❍	❍	❍	❍	❍
Abnormal BMI	❍	❍	❍	❍	❍
Disability Rate	❍	❍	❍	❍	❍
Asthma	❍	❍	❍	❍	❍
Infectious Disease	❍	❍	❍	❍	❍
Hospital Admissions Due to Injury	❍	❍	❍	❍	❍

Domain: Poverty

The indicators in this domain are listed in order of the priority given to them in the first round of the Delphi. If you disagree with this order, please re-arrange the indicators to the order you think is best, otherwise, leave them unchanged.

_____ 1) Poverty (National); Proportion of children and young people (aged 0-24) living in poverty in all its dimensions according to national definitions
_____ 2) Jobless Households; Share of persons aged 0-17 who are living in households where no-one works
_____ 3) Inadequate Urban Housing; Proportion of children and young people in urban population living in slums, informal settlements or inadequate housing
_____ 4) Child Labour; Proportion and number of children aged 5‐17 years engaged in child labour, by sex and age
_____ NEW) House Crowding; The proportion of children under 18 years and young people aged 18–24 years living in crowded households, i.e. a household that requires one or more additional bedrooms

To your knowledge, in your country, ...

	Is this indicator easily available?			If not, do you think it could easily be made available?	
	Yes	No	I Don't Know	Yes	No
Poverty (National)	❍	❍	❍	❍	❍
Jobless Households	❍	❍	❍	❍	❍
Inadequate Urban Housing	❍	❍	❍	❍	❍
Child Labour	❍	❍	❍	❍	❍
House Crowding	❍	❍	❍	❍	❍

Domain: Crime and Protection

The indicators in this domain are listed in order of the priority given to them in the first round of the Delphi. If you disagree with this order, please re-arrange the indicators to the order you think is best, otherwise, leave them unchanged.

_____ 1) Child Abuse; Proportion of children aged 1-17 years who experienced any physical punishment and/or psychological aggression by caregivers in the past month
_____ 2) Sexual Violence; Proportion of young women and men aged 18-24 years who experienced sexual violence by age 18
_____ 3) Female Partner Violence; Proportion of ever-partnered women and girls aged 15-24 who experienced any physical, sexual and/or emotional violence by a current or former intimate partner in past 12 months
_____ 4) Crime Victimization Rate; Percentage of victims of violence in the previous 12 months who reported their victimization to competent authorities
_____ 5) Human Trafficking; Number of victims of human trafficking per 100,000 population, for those aged 0-24, by sex, and form of exploitation
_____ 6) Early Age at Marriage/Union; Proportion of women aged 20-24 years who were married or in a union before age 15 and before age 18
_____ 7) Incarceration Rates; Proportion of people aged 13-17, 18-24 male or female, detained in residential placement
_____ 8) Intentional Homicide; Number of homicide victims amongst those aged 0-24 per 100,000 population (i.e., homicide rates), by age and sex (and by mechanism and type of perpetrator, where possible)

To your knowledge, in your country, ...

	Is this indicator easily available?			If not, do you think it could easily be made available?	
	Yes	No	I Don't Know	Yes	No
Child Abuse	❍	❍	❍	❍	❍
Sexual Violence	❍	❍	❍	❍	❍
Female Partner Violence	❍	❍	❍	❍	❍
Crime Victimization Rate	❍	❍	❍	❍	❍
Human Trafficking	❍	❍	❍	❍	❍
Early Age at Marriage/Union	❍	❍	❍	❍	❍
Incarceration Rates	❍	❍	❍	❍	❍
Intentional Homicide	❍	❍	❍	❍	❍

Domain: Social Indicators

The indicators in this domain are listed in order of the priority given to them in the first round of the Delphi. If you disagree with this order, please re-arrange the indicators to the order you think is best, otherwise, leave them unchanged.

_____ 1) Socio-Economic Circumstances; Percentage of children and young people living in households in each of the six socio-economic categories of upper non-manual, lower non-manual, skilled manual, unskilled manual, self-employed, and farmer, derived from the International Standard Classification of Occupations (ISCO) classification, and determined by resident with the highest occupation, in age groups 0-4, 5-9, 10-14, 15-17, 18-24.
_____ 2) Income; Proportion of people aged 15-24 living below 50% of median income, by sex and persons with disabilities
_____ 3) Children in Care; Percentage of children who are under the care or formal supervision of statutory Social Welfare or Social Services agencies, by sex and age groups 0-4, 5-9, 10-14, 15-17.
_____ 4) Access to Services; Proportion of population (aged 0-24) living in households with access to services, including access to public transport, by sex, and persons with disabilities
_____ 5) Birth Registration; Proportion of children under 5 years of age whose births have been registered with a civil authority, by age
_____ 6) Asylum Seekers; Rate of children and young people seeking asylum, alone or as part of a family, by sex, in age groups 0-4, 5-9, 10-14, 15-17, 18-24.
_____ 7) Receipt of Child Benefit or Equivalent Payment; Percentage of children receiving a child or other social grant
_____ NEW) Internet Access in the Home; The number of children under 18 years and young people aged 18–24 years living in households with access to the internet, as a proportion of all children and young people.

To your knowledge, in your country, ...

	Is this indicator easily available?			If not, do you think it could easily be made available?	
	Yes	No	I Don't Know	Yes	No
Socio-Economic Circumstances	❍	❍	❍	❍	❍
Income	❍	❍	❍	❍	❍
Children in Care	❍	❍	❍	❍	❍
Access to Services	❍	❍	❍	❍	❍
Birth Registration	❍	❍	❍	❍	❍
Asylum Seekers	❍	❍	❍	❍	❍
Receipt of Child Benefit or Equivalent Payment	❍	❍	❍	❍	❍
Internet Access in the Home	❍	❍	❍	❍	❍

Dimension B: Education and Employment

The transition into education, training, and work are important stages to children and young people's development, and in turn their health and well-being.
The proposed indicators are divided into two sub-domains;

1. Education
2. Employment

I would be happy to review the indicators in this dimension.
❍ Yes, answer this dimension
❍ No, skip to the next dimension

Domain: Education

The indicators in this domain are listed in order of the priority given to them in the first round of the Delphi. If you disagree with this order, please re-arrange the indicators to the order you think is best, otherwise, leave them unchanged.

_____ 1) Educational Development; Percentage of population in age groups (under 15, 15-24) achieving at least a fixed level of proficiency in functional (a) literacy and (b) numeracy skills, by sex
_____ 2) Education Completion Rate; The completion rate for primary education, lower and upper secondary education, and tertiary education.
_____ 3) School Drop-out Rate; Percentage of children who leave school (voluntarily or by exclusion) before the statutory school leaving age, by sex.
_____ 4) Early Childhood Education Rate; Percentage of children aged 3 and under 5 years enrolled in a Level 0 (pre-primary) education or kindergarten programme, by sex and by socio-economic group when available.
_____ 5) Early School Readiness; Parent reports of children's competence in four cognitive and early literacy school readiness skills: (1) recognizing all letters; (2) counting to 20 or higher; (3) writing his or her name; and (4) reading words in books
_____ 6) Educational Aspiration; An aspirational indicator: How far in your education do you expect to go?
_____ 7) ICT skills; Proportion of children and young people with information and communications technology (ICT) skills, by type of skill
_____ 8) Liking School; Percentage of school-aged children reporting to like school a lot

To your knowledge, in your country, ...

	Is this indicator easily available?			If not, do you think it could easily be made available?	
	Yes	No	I Don't Know	Yes	No
Educational Development	❍	❍	❍	❍	❍
Education Completion Rate	❍	❍	❍	❍	❍
School Drop-out Rate	❍	❍	❍	❍	❍
Early Childhood Education Rate	❍	❍	❍	❍	❍
Early School Readiness	❍	❍	❍	❍	❍
Educational Aspiration	❍	❍	❍	❍	❍
ICT skills	❍	❍	❍	❍	❍
Liking School	❍	❍	❍	❍	❍

Domain: Employment

The indicators in this domain are listed in order of the priority given to them in the first round of the Delphi. If you disagree with this order, please re-arrange the indicators to the order you think is best, otherwise, leave them unchanged.

_____ % NEET; Proportion of youth (aged 15-24 years) not in education, employment or training
_____ Unemployment Rate; Unemployment Rate for those aged 15-24, by sex, and persons with disabilities.
_____ Income Equality; Average hourly earnings of female and male employees, by occupation, age and persons with disabilities
_____ Financial Literacy and Savings; Proportion of adolescents and young people (aged 15-24) with financial literacy skills and ownership of savings

To your knowledge, in your country, ...

	Is this indicator easily available?			If not, do you think it could easily be made available?	
	Yes	No	I Don't Know	Yes	No
% NEET	❍	❍	❍	❍	❍
Unemployment Rate	❍	❍	❍	❍	❍
Income Equality	❍	❍	❍	❍	❍
Financial Literacy and Savings	❍	❍	❍	❍	❍

Dimension C: Health-Related Behaviours

Parents, children themselves, and other influences all contribute to the factors which determine health and well-being. We have identified indicators relating to nutrition, lifestyle, sexual health, and other identified factors.
The proposed indicators are divided into four sub-domains:

1. Lifestyle Determinants
2. Mental Health
3. Parental Determinants and Relationships
4. Reproductive and Sexual Health

I would be happy to review the indicators in this dimension
❍ Yes, answer this dimension
❍ No, skip to the next dimension

Domain: Lifestyle Determinants

The indicators in this domain are listed in order of the priority given to them in the first round of the Delphi. If you disagree with this order, please re-arrange the indicators to the order you think is best, otherwise, leave them unchanged.

_____ 1) Tobacco Smoking; Proportion of adolescents and young people aged 13-24 who have smoked at least one cigarette or more in the past 30 days
_____ 2) Alcohol Abuse; Proportion of adolescents/young people aged 13-24 who had at least one alcoholic drink on at least one or more days during the past 30 days
_____ 3) Physical Activity; Proportion of children and young people reporting that they undertake a vigorous activity for at least two hours a week, by sex, age and by socioeconomic group when available.
_____ 4) Substance Misuse; Proportion of children and young people (aged 15-24), by sex and by socio-economic group when available. who report that they have: (a) used cannabis more than twice during the last 30 days; (b) ever used heroin; and (c) ever used ecstasy,
_____ 5) Eating Behaviours; Eating fruit and vegetables every day (%)
_____ 6) Eating Behaviours; Drinking soft drinks and sweets every day (%)
_____ 7) Sedentary Behaviour, Watching Television and Screen Time; Watch television or other screens, for two or more hours on weekdays (%)
_____ 8) Leisure Activity; Proportion of children and young people who participate in recreational, social or leisure activities for a specified time during the day/week
_____ 9) Eating Behaviours; Eating breakfast every school day (%)
_____ 10) Oral Health; Brushing teeth more than once a day (%)
_____ NEW) Active Play; The proportion of children and young people participating in daily, unstructured unorganized play.

To your knowledge, in your country, ...

	Is this indicator easily available?			If not, do you think it could easily be made available?	
	Yes	No	I Don't Know	Yes	No
Tobacco Smoking	❍	❍	❍	❍	❍
Alcohol Abuse	❍	❍	❍	❍	❍
Physical Activity	❍	❍	❍	❍	❍
Substance Misuse	❍	❍	❍	❍	❍
Eating Behaviours; Eating fruit and vegetables	❍	❍	❍	❍	❍
Eating Behaviours; consuming soft drinks and sweets	❍	❍	❍	❍	❍
Sedentary Behaviour, Watching Television and Screen Time	❍	❍	❍	❍	❍
Leisure Activity	❍	❍	❍	❍	❍
Eating Behaviours; Eating breakfast	❍	❍	❍	❍	❍
Oral Health	❍	❍	❍	❍	❍
Active Play	❍	❍	❍	❍	❍

Domain: Mental Health

The indicators in this domain are listed in order of the priority given to them in the first round of the Delphi. If you disagree with this order, please re-arrange the indicators to the order you think is best, otherwise, leave them unchanged.

_____ 1) Prevalence of Depression & Anxiety; Prevalence of Depression/Anxiety in children and young people
_____ 2) Attempted to Suicide; Annual incidence of attempted suicide, defined by inpatient hospital stays with a discharge diagnosis of attempted suicide, per 100,000 population, by sex, age-groups 10-14, 15-17, 18-24, and by socio-economic group when available.
_____ 3) Life Satisfaction; High Satisfaction with life (%) (Cantril Ladder score of ≥6)
_____ 4) Feeling of Loneliness; Most of the time or always felt lonely during the past 12 months (%)
_____ 5) Suicide Ideation and Attempts; Made a plan about how they would attempt suicide during the past 12 months (%)
_____ 6) Mental Health Service Use; Proportion of persons (aged 0-24) with a severe mental disorder (psychosis; bipolar affective disorder; moderate-severe depression) who are using services (%)
_____ NEW) Hospital-Treated Episodes of Deliberate Self-Harm; Hospital-treated episodes of deliberate self-harm, by gender and age group (0-4, 5-9, 10-14, 15-19, 20-24)

To your knowledge, in your country, ...

	Is this indicator easily available?			If not, do you think it could easily be made available?	
	Yes	No	I Don't Know	Yes	No
Prevalence of Depression & Anxiety	❍	❍	❍	❍	❍
Attempted to Suicide	❍	❍	❍	❍	❍
Life Satisfaction	❍	❍	❍	❍	❍
Feeling of Loneliness	❍	❍	❍	❍	❍
Suicide Ideation and Attempts	❍	❍	❍	❍	❍
Mental Health Service Use	❍	❍	❍	❍	❍
Hospital-Treated Episodes of Deliberate Self-Harm	❍	❍	❍	❍	❍

Domain: Parental Determinants and Relationships

The indicators in this domain are listed in order of the priority given to them in the first round of the Delphi. If you disagree with this order, please re-arrange the indicators to the order you think is best, otherwise, leave them unchanged.

_____ 1) Being Bullied or Bullying Others; Being a victim of bullying or bullying others at school at least twice in the past couple of months (%)
_____ 2) Parent–Child Communication; Percentage of children and young people who report that they find it easy or very easy to talk with their parents when something is really bothering them.
_____ 3) Parental Educational Attainment; Percentage whose current "mother" had attained Elementary / Lower Secondary / Upper Secondary/ Tertiary education, as a percentage of all children and young people in the age groups 0-4, 5-9, 10-14, 15-17, 18-24.

_____ 4) Breastfeeding; Percentage of children breastfed at a) Hospital discharge or immediately after birth, b) 6 months, c) 12 months
_____ 5) Child in Single Parent Households; Percentage of children who live in family household units with only one parent or primary caregiver-resident, by male, female, and total, in age groups 0-4, 5-9, 10-14, 15-17.
_____ 6) Close Friendships; Percentage of adolescents and young people who have three or more close friends of the same gender
_____ 7) Electronic Media Contact; Percentage of adolescents and young people who make daily Electronic Media Contact with friends

To your knowledge, in your country, ...

	Is this indicator easily available?			If not, do you think it could easily be made available?	
	Yes	No	I Don't Know	Yes	No
Being Bullied or Bullying Others	❍	❍	❍	❍	❍
Parent–Child Communication	❍	❍	❍	❍	❍
Parental Educational Attainment	❍	❍	❍	❍	❍
Breastfeeding	❍	❍	❍	❍	❍
Child in Single Parent Households	❍	❍	❍	❍	❍
Close Friendships	❍	❍	❍	❍	❍
Electronic Media Contact	❍	❍	❍	❍	❍

Domain: Reproductive and Sexual Health

The indicators in this domain are listed in order of the priority given to them in the first round of the Delphi. If you disagree with this order, please re-arrange the indicators to the order you think is best, otherwise, leave them unchanged.

_____ 1) Adolescent Birth Rate; Annual number of births (aged 10-14, 15-19 years) per 1,000 adolescent females in that age group
_____ 2) Sexually Transmitted Infections (STIs); Rate of Chlamydia, Gonorrhoea, and Syphilis among young adults ages 15 to 24
_____ 3) Condom Use; The proportion of adolescents and young people aged 15-24 with one or more partner in the last 12 months who report condom use in their last intercourse
_____ 4) Contraceptive Use; Contraception (met need): % of adolescents and young people who are sexually active and who have their need for contraception satisfied with modern methods
_____ 5) Abortion Rate; Proportion of pregnancies in 15 to 24 year olds ending in legal abortion
_____ 6) Women Informed Decisions; Proportion of women aged 15-24 years who make their own informed decisions regarding sexual relations, contraceptive use and reproductive health care
_____ 7) Children and Young People AIDS Incidence; Rate Number of Newly Diagnosed AIDS Cases Among Children and Young People by age groups; under 13, 13-19, 20-24
_____ 8) Age at First Intercourse; Mean age of first intercourse, (for those aged 15-24)

To your knowledge, in your country, ...

	Is this indicator easily available?			If not, do you think it could easily be made available?	
	Yes	No	I Don't Know	Yes	No
Adolescent Birth Rate	❍	❍	❍	❍	❍
Sexually Transmitted Infections (STIs)	❍	❍	❍	❍	❍
Condom Use	❍	❍	❍	❍	❍
Contraceptive Use	❍	❍	❍	❍	❍
Abortion Rate	❍	❍	❍	❍	❍
Women Informed Decisions	❍	❍	❍	❍	❍
Children and Young People AIDS Incidence Rate	❍	❍	❍	❍	❍
Age at First Intercourse	❍	❍	❍	❍	❍

Dimension D: Health Systems and Policy

Health systems and their quality are important in protecting and promoting the health and well-being of children and young people. As children cannot be their own advocates in all social and other respects, legally backed policies and services are important in key areas, and we recommend indicators on several.
The indicators are divided into five sub-domains:

1. Health and Social Policy
2. Disability
3. Environment
4. Health System Quality
5. Participation and Engagement

I am happy to review the indicators in this dimension:
❍ Yes, answer this dimension
❍ No, end survey

Domain: Health and Social Policy

The indicators in this domain are listed in order of the priority given to them in the first round of the Delphi. If you disagree with this order, please re-arrange the indicators to the order you think is best, otherwise, leave them unchanged.

_____ 1) Gender Equality; Number of countries with laws and regulations that guarantee women aged 15-24 years' access to sexual and reproductive health care, information and education
_____ 2) Mental Health Policy; Existence of a national policy/plan for mental health that is in line with international and regional human rights instruments
_____ 3) Health Care for Marginalised Groups; Is it national policy that all children and young people (aged 0-24) in the following groups have access to both immunisation and to non-emergency diagnostic investigations comparable to that offered the general resident child population? a) Asylum seekers b) Children of illegal immigrants / illegal residents c) Homeless children d) Culturally itinerant children (gypsies, Romany, etc.)
_____ 4) Anti-Bullying Policies in Schools; Percentage of children attending schools with a written anti-bullying policy in operation, as a percentage of all school children.
_____ 5) Physical Punishment; Percentage of children and young people protected by law against physical punishment, expressed as a percentage of the national population (aged 0-24)
_____ 6) Migration Policy; Number of countries that have implemented well-managed migration policies

To your knowledge, in your country, ...

	Is this indicator easily available?			If not, do you think it could easily be made available?	
	Yes	No	I Don't Know	Yes	No
Gender Equality	❍	❍	❍	❍	❍
Mental Health Policy	❍	❍	❍	❍	❍
Marginalised Groups Health Care	❍	❍	❍	❍	❍
Anti-Bullying Policies in Schools	❍	❍	❍	❍	❍
Physical Punishment	❍	❍	❍	❍	❍
Migration Policy	❍	❍	❍	❍	❍

Domain: Disability

The indicators in this domain are listed in order of the priority given to them in the first round of the Delphi. If you disagree with this order, please re-arrange the indicators to the order you think is best, otherwise, leave them unchanged.

_____ 1) Education Facilities; Percentage of schools with adapted infrastructure and materials for students with disabilities
_____ 2) Integration of People with Disabilities in Schools; Proportion of school-age disabled children attending mainstream schools
_____ 3) Integration of People with Disabilities into Employment; Employment rate of disabled women and men aged 18-24, compared to general population
_____ 4) Teacher Education; Percentage of teachers in service who have received in-service training in the last 12 months to teach students with special educational needs

To your knowledge, in your country, ...

	Is this indicator easily available?			If not, do you think it could easily be made available?	
	Yes	No	I Don't Know	Yes	No
Education Facilities	❍	❍	❍	❍	❍
Integration of Disabled in Schools	❍	❍	❍	❍	❍
Integration of Disabled into Employment	❍	❍	❍	❍	❍
Teacher Education	❍	❍	❍	❍	❍

Domain: Environment

The indicators in this domain are listed in order of the priority given to them in the first round of the Delphi. If you disagree with this order, please re-arrange the indicators to the order you think is best, otherwise, leave them unchanged.

_____ 1) Environmental Tobacco Smoke; Existence and enforcement of laws and regulations aimed at protecting children and young people from exposure to environmental tobacco smoke in public places.
_____ 2) Exposure to Air Pollution; Percentage of children and young people aged 0-24 living in localities with an annual mean concentration of > 40 ppm of PM10.
_____ 3) Transportation Safety; Existence and actual enforcement of legislation and regulations establishing mandatory requirements for safe mobility and transport for children and young people.
_____ 4) Provision of Public Spaces; Average share of the built-up area of cities that is open space for public use for all, by sex, age and persons with disabilities
_____ 5) Exposure to Hazardous Noise; The existence of policies aimed at assessing and reducing the exposure of babies and young children to potentially harmful noise in ICU units, day-care centres, schools, and kindergartens.
_____ 6) Exposure to Lead; The existence of legislation and regulations that limit the use of lead in building and decorating materials and establish bio-monitoring of babies and children at high risk.

To your knowledge, in your country, ...

	Is this indicator easily available?			If not, do you think it could easily be made available?	
	Yes	No	I Don't Know	Yes	No
Environmental Tobacco Smoke	❍	❍	❍	❍	❍
Air Pollution Exposure	❍	❍	❍	❍	❍
Transportation Safety	❍	❍	❍	❍	❍
Provision of Public Spaces	❍	❍	❍	❍	❍
Exposure to Hazardous Noise	❍	❍	❍	❍	❍
Exposure to Lead	❍	❍	❍	❍	❍

Domain: Health System Quality

The indicators in this domain are listed in order of the priority given to them in the first round of the Delphi. If you disagree with this order, please re-arrange the indicators to the order you think is best, otherwise, leave them unchanged.

_____ 1) Immunisation Coverage; Immunisation rates for childhood immunisation, expressed as children aged 24-35 months inclusive having completed primary courses of immunisation as a percentage of all children in that age-group, separately for the following antigens: diphtheria, pertussis, tetanus, poliomyelitis, Haemophilus influenza type b, measles, mumps, rubella, hepatitis B, meningococcus C.
_____ 2) Leukaemia 5-year Survival; Five year survival rate for acute lymphatic leukaemia, in age-groups at diagnosis 0-4; 5-9; 10-14; 15-19, 20-24.
_____ 3) Parental Inpatient Accompaniment; Percentage of inpatient bed days of children aged under 16 occurring in hospitals where accompanying by 'parents' day and night is offered, as a percentage of all bed days for this age group.

To your knowledge, in your country, ...

	Is this indicator easily available?			If not, do you think it could easily be made available?	
	Yes	No	I Don't Know	Yes	No
Immunisation Coverage	❍	❍	❍	❍	❍
Leukaemia 5-year Survival	❍	❍	❍	❍	❍
Parental Inpatient Accompaniment	❍	❍	❍	❍	❍

Domain: Participation and Engagement

The indicators in this domain are listed in order of the priority given to them in the first round of the Delphi. If you disagree with this order, please re-arrange the indicators to the order you think is best, otherwise, leave them unchanged.

_____ 1) Participation in Decisions; Proportion of population who believe decision-making is inclusive and responsive, by sex, age, disability and population group
_____ 2) Trust; Proportion of 13-year-old students endorsing values and attitudes promoting equality, trust and participation in governance
_____ 3) Volunteering; % of adolescents and young people who volunteered at least once in the past month
_____ NEW) Participation in Sports Clubs, Leisure Time or Youth Clubs/Associations or Cultural Organisations; Proportion of children and young people reporting that they have participated in activities of a sports club, leisure time or youth club, any kind of youth association or cultural organisation in the last 12 months.

To your knowledge, in your country, ...

	Is this indicator easily available?			If not, do you think it could easily be made available?	
	Yes	No	I Don't Know	Yes	No
Participation in Decisions	❍	❍	❍	❍	❍
Trust	❍	❍	❍	❍	❍
Volunteering	❍	❍	❍	❍	❍
Participation in Sports Clubs, Leisure Time or Youth Clubs/Associations or Cultural Organisations	❍	❍	❍	❍	❍

Thank you very much for taking part in Round Two of the Delphi Study Process. We appreciate your feedback.

Appendix G: Round Three Delphi Questionnaire

Delphi Study: Round Three

Welcome to the third round of the eDelphi consensus process.

Thank you for agreeing to remain a member of the panel to identify a core set of indicators to be used to monitor the health and well-being of children and young people (aged 0-24) across Europe.

In this phase, we are trying to establish a consensus on a set of around 30 to 40 indicators, concentrating on those which exist, or can readily be collected, and are of greatest value in measuring child and young peoples' health and well-being.
Please think carefully about the most important indicators, and do not hesitate to score down those you think are of less importance. This is your opportunity to give your views. We hope that you will find it an engaging and enjoyable experience.
Please draw on your own personal and professional experience, as well as your knowledge of current research and practice, in your country, and across Europe.

The study is being led by Sara McQuinn and Prof. Anthony Staines from Dublin City University (DCU), Ireland, and is part of the wider European project, BRIDGE Health.

BRIDGEHEALTH
BRidging Information and Data Generation for Evidence-based Health Policy and Research

In the last round, you were asked to rank a set of 96 indicators by importance and availability within 15 domains. Full details of each of the indicators are available **here**.
We have taken careful note of your responses, and our report on these is available here.
Within each domain, there was a high level of agreement about the ranking of the indicators suggested. This suggests a reasonable consensus on the ordering of the indicators has been reached. We also asked you whether you believed each of the indicators was available in your country, and, if not, whether it could be made available. There was less consensus, even within countries, about this, but most indicators were reported as being reasonably widely available.

For Phase 3, we have made the following choices. Within each of our four dimensions, and the fifteen domains, we have selected the highest ranked indicators in each domain. We have divided these into two sets, those you have reported as widely available, and those not so widely available.

For those which are available, we suggest that these be used, and we only ask you to agree or disagree with the list we have prepare. If you disagree, please leave a short note explaining why. If the particular indicator(s) is/are not available in your country please say so.

For indicators which are not so readily available, we have asked you to rank the chosen indicators, selecting those which you consider most important. Our aim is to provide guidance on where inevitably limited resources can be used to best effect to make important indicators more widely available. As before the indicators are divided into four dimensions. Within each dimension, they are grouped into a number of domains.

- Dimension A Demographic and Socio-Economic
- Dimension B: Education and Employment
- Dimension C: Health-related Behaviours
- Dimension D: Health Systems and Policy

Please note that, also as before, your responses to this survey are anonymous and your participation will be kept strictly confidential.
This is why we need to ask you again for some basic demographics.

I agree to take part in this survey

❍ Yes
❍ No

Please identify which region you live in?

- ❍ Europe
  a) In what country in Europe are you based?
- ❍ Asia
- ❍ Africa
- ❍ the Americas
- ❍ Oceania

What do you work as?

- ❍ Advocate
- ❍ Clinician
- ❍ Epidemiologist
- ❍ Health Promotion Officer
- ❍ Health Policy Advisor
- ❍ Paediatrician
- ❍ Project Manager
- ❍ Researcher
- ❍ Statistician
- ❍ Student
- ❍ Other

What type of organization do you work for?

- ❍ International Organization
- ❍ National Government
- ❍ Regional Government
- ❍ Health Care Provider
- ❍ Research Project
- ❍ Voluntary Organisation
- ❍ Media
- ❍ University/Third Level Institution
- ❍ Private Practice
- ❍ Other

Dimension A: Demographic and Socio-Economic

This dimension includes the demographic distribution of children and young people, in addition to some specific indicators on socio-economic factors that are health determinants. The proposed indicators are divided into four sub-domains:

1. Mortality, Morbidity and Disability
2. Poverty
3. Crime and Protection
4. Social Indicators

Domain: Mortality, Morbidity, and Disability

For this domain, these two indicators were highly ranked, and both are widely available.

- Total Mortality Rate
- Selected Cause-Specific Mortality

Do you agree with the use of these two indicators?
❍ Yes
❍ No

If you selected no, please explain why these two indicators should not be used?
_____

The next two indicators were highly ranked, but may be less widely available than the other indicators for this domain.
It will take additional work and resources to collect these uniformly across Europe. However, if you feel they are important and should be a priority for future work, please say so.

	Yes	No
Abnormal BMI	❍	❍
Disability Rate	❍	❍

Domain: Poverty

These two indicators were highly ranked, and both are widely available.

- Poverty Rate (National)
- Jobless Households

Do you agree with the use of these two indicators?
❍ Yes
❍ No

If you selected no, please explain why these two indicators should not be used?
_____

This indicator was highly ranked but may be less widely available than the other indicators for this domain.
It will take additional work and resources to collect this uniformly across Europe. However, if you feel it is important and should be a priority for future work, please say so.

	Yes	No
Inadequate Urban Housing	❍	❍

Domain: Crime and Protection

These four indicators were highly ranked in their domain.
However, none of them seems to be widely available. It will take additional work and resources to collect these uniformly across Europe.

Please select your top two priorities from this list.

- ❑ Child Abuse
- ❑ Sexual Violence
- ❑ Female Partner Violence
- ❑ Crime Victimisation Rate

Domain: Social Indicators

For this domain, these three indicators were highly ranked, and are widely available.

- Socio-Economic Circumstances
- Income
- Children in Care

Do you agree with the use of these three indicators?
❍ Yes
❍ No

If you selected no, please explain why these two indicators should not be used?
_____

This indicator was highly ranked, but may be less widely available than the other indicators for this domain. It will take additional work and resources to collect this uniformly across Europe. However, if you feel it is important and should be a priority for future work, please say so.

	Yes	No
Access to Services	❍	❍

Demographic and Socio-Economic

Below is the list of indicators that were ranked highly in their domains but were scored low in their availability. Our aim is to develop a balanced and coherent set of indicators in this dimension, making up the best and most useful set of indicators to monitor child and young people's health and well-being.

Please rank these in order of the priority you would give for collecting these in every country across Europe.

_____ Abnormal BMI
_____ Disability Rate
_____ Inadequate Urban Housing
_____ Child Abuse
_____ Sexual Violence
_____ Female Partner Violence
_____ Crime Victimization Rate
_____ Access to Services

Dimension B: Education and Employment

The transition into education, training, and work are important stages to children and young people's development, and in turn their health and well-being.
The proposed indicators are divided into two sub-domains;

1. Education
2. Employment

Domain: Education

For this domain, these three indicators were highly ranked, and all are widely available.

- Education Completion Rate
- School Drop-Out Rate
- Early Childhood Education Rate

Do you agree with the use of these three indicators?
❍ Yes
❍ No

If you selected no, please explain why these two indicators should not be used?
_____

This indicator was highly ranked, but may be less widely available than the other indicators for this domain.
It will take additional work and resources to collect this uniformly across Europe.
However, if you feel it is important and should be a priority for future work, please say so.

	Yes	No
Educational Development	❍	❍

Domain: Employment

For this domain, these two indicators were highly ranked, and both are widely available.

- % NEET
- Employment Rate

Do you agree with the use of these two indicators?

❍ Yes
❍ No

If you selected no, please explain why these two indicators should not be used?

_____

Education and Employment

In this dimension there was only one indicator that were ranked highly in its domain, but scored low on its availability. Our aim is to develop a balanced and coherent set of indicators in this dimension making up the best and most useful set of indicators to monitor child and young people's health and well-being.

Is this indicator 'Educational Development' a priority for collection in every country across Europe.

- ❑ Yes
- ❑ No

Dimension C: Health-Related Behaviours

Parents, children themselves, and other influences all contribute to the factors which determine health and well-being. We have identified indicators relating to nutrition, lifestyle, sexual health, and other identified factors.
The proposed indicators are divided into four sub-domains:

1. Lifestyle Determinants
2. Mental Health
3. Parental Determinants and Relationships
4. Reproductive and Sexual Health

Domain: Lifestyle Determinants

These six indicators were highly ranked in their domain. However, none of them seems to be widely available across the range of ages we want to study.
It will take additional work and resources to collect these uniformly across Europe.

Please select your top two priorities from this list.

- ❑ Tobacco Smoking
- ❑ Alcohol Abuse
- ❑ Physical Activity
- ❑ Substance Misuse
- ❑ Eating Behaviours: Eating fruit and vegetables
- ❑ Eating Behaviours: Consuming soft drinks and sweets

Domain: Mental Health

For this domain, only one indicator was both highly ranked and widely available.

- Attempted Suicide

Do you agree with the use of this indicator?
❍ Yes
❍ No

If you selected no, please explain why these two indicators should not be used?
_____

These three indicators were highly ranked, but may be less widely available than the other indicators for this domain.
It will take additional work and resources to collect these uniformly across Europe.

However, if you feel they are important and should be a priority for future work, please say so.

	Yes	No
Prevalence of Depression & Anxiety	❍	❍
Life Satisfaction	❍	❍
Feeling of Loneliness	❍	❍

Domain: Parental Determinants and Relationships

These four indicators were highly ranked in their domain. However, none of them seems to be widely available.
It will take additional work and resources to collect these uniformly across Europe.

Please select your two priorities from this list.

- ❑ Being Bullied or Bullying Others
- ❑ Parent-Child Communication
- ❑ Parental Educational Attainment
- ❑ Breastfeeding

Domain: Reproductive and Sexual Health

For this domain, these two indicators were highly ranked, and both are widely available.

- Adolescent Birth Rate
- Sexually Transmitted Infections (STIs)

Do you agree with the use of these two indicators?
❍ Yes
❍ No

If you selected no, please explain why these two indicators should not be used?
_____

These two indicators were highly ranked, but may be less widely available than the other indicators for this domain.
It will take additional work and resources to collect these uniformly across Europe.

However, if you feel they are important and should be a priority for future work, please say so.

	Yes	No
Condom Use	❍	❍
Contraceptive Use	❍	❍

Health-Related Behaviours

Below is the rather long list of indicators for this dimension that were ranked highly in their domains but were scored low in their availability. Our aim is to develop a balanced and coherent set of indicators in this dimension making up the best and most useful set of indicators to monitor child and young people's health and well-being.

Please rank these in order of the priority you would give for collecting these in every country across Europe.

_____ Tobacco Smoking
_____ Alcohol Abuse
_____ Physical Activity
_____ Substance Misuse
_____ Eating Behaviours: Eating fruit and vegetables
_____ Eating Behaviours: Consuming soft drinks and sweets
_____ Prevalence of Depression & Anxiety
_____ Life Satisfaction
_____ Feeling of Loneliness
_____ Being Bullied or Bullying Others
_____ Parent-Child Communication
_____ Parental Educational Attainment
_____ Breastfeeding
_____ Condom Use
_____ Contraceptive Use

Dimension D: Health Systems and Policy

Health systems and their quality are important in protecting and promoting the health and well-being of children and young people. As children cannot be their own advocates in all social and other respects, legally backed policies and services are important in key areas, and we recommend indicators on several.

The indicators are divided into five sub-domains:

1. Health and Social Policy
2. Disability
3. Environment
4. Health System Quality
5. Participation and Engagement

Domain: Health and Social Policy

These three indicators were highly ranked in their domain. However, none of them seems to be widely available.
It will take additional work and resources to collect these uniformly across Europe.

Please select your two priorities from this list.

- ❑ Gender Equality
- ❑ Mental Health Policy
- ❑ Health Care for Marginalised Groups

Domain: Disability

For this domain, these two indicators were highly ranked, and both are widely available.

- Education Facilities
- Integration of People with Disabilities into Employment

Do you agree with the use of these two indicators?
❍ Yes
❍ No

If you selected no, please explain why these two indicators should not be used?
_____

This indicator was highly ranked, but may be less widely available than the other indicators for this domain. It will take additional work and resources to collect this uniformly across Europe.
However, if you feel it is important and should be a priority for future work, please say so.

	Yes	No
Integration of People with Disabilities in Schools	❍	❍

Domain: Environment

For this domain, these two indicators were highly ranked, and both are widely available.

- Environmental Tobacco Smoke
- Transportation Safety

Do you agree with the use of these two indicators?
❍ Yes
❍ No

If you selected no, please explain why these two indicators should not be used?
_____

This indicator was highly ranked, but may be less widely available than the other indicators for this domain. It will take additional work and resources to collect this uniformly across Europe.
However, if you feel it is important and should be a priority for future work, please say so.

	Yes	No
Exposure to Air Pollution	❍	❍

Domain: Health System Quality

For this domain, these two indicators were highly ranked, and both are widely available.

- Immunisation Coverage
- Leukaemia 5-year survival

Do you agree with the use of these two indicators?

❍ Yes
❍ No

If you selected no, please explain why these two indicators should not be used?

_____

Domain: Participation and Engagement

These three indicators were highly ranked in their domain. However, none of them seems to be widely available.
It will take additional work and resources to collect these uniformly across Europe.

Please select your two priorities from this list.

- ❑ Participation in Decisions
- ❑ Trust
- ❑ Volunteering

Health Systems and Policy

Below is the list of indicators that were ranked highly in their domains but were scored low in their availability. Our aim is to develop a balanced and coherent set of indicators in this dimension making up the best and most useful set of indicators to monitor child and young people's health and well-being.

Please rank these in order of the priority you would give for collecting these in every country across Europe.

_____ Gender Equality
_____ Mental Health Policy
_____ Health Care for Marginalised Groups
_____ Integration of People with Disabilities in Schools
_____ Exposure to Air Pollution
_____ Participation in Decisions
_____ Trust
_____ Volunteering

Thank you very much for taking part in Round Three of the Delphi Study Process. We appreciate your feedback and are very grateful for your commitment and contribution to this study. We will email you the final report once it is complete.

If in the meantime, you have any questions please do not hesitate to email one of us;

Sara McQuinn, sara.mcquinn2@mail.dcu.ie
Anthony Staines, anthony.staines@dcu.ie

Appendix H: Ethics Approval – 'The Delphi Process"

Ollscoil Chathair Bhaile Átha Cliath
Dublin City University

DCU

Ms Sara McQuinn
School of Nursing and Human Science

14 December 2016

REC Reference: **DCUREC/2016/199**

Proposal Title: **BridgeHealth**

Applicant(s): **Sara McQuinn, Prof Anthony Staines**

Dear Sara,

This research proposal qualifies under our Notification Procedure, as a low risk social research project. Therefore, the DCU Research Ethics Committee approves this project.

Materials used to recruit participants should state that ethical approval for this project has been obtained from the Dublin City University Research Ethics Committee.

Should substantial modifications to the research protocol be required at a later stage, a further amendment submission should be made to the REC.

Yours sincerely,

Donal O' Gorman

Dr Dónal O'Gorman
Chairperson
DCU Research Ethics Committee

DCU
Research & Innovation

Taighde & Nuálaíocht Tacaíocht
Ollscoil Chathair Bhaile Átha Cliath,
Baile Átha Cliath, Éire

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Appendix I: Changes Made to Indicator Set

Two domains were merged.

Dimension C - Health related behaviours, Domain: Disability and Injuries merged with Dimension A, Domain: Mortality and Morbidity.

Formed part of Dimension A. Re-named Domain: Mortality, Morbidity and Disability.

One indicator title was changed. Dimension C – Health related Behaviours, Domain: Lifestyle Determinants, Updated indicator title: 'Watch television or other screens, for two or more hours on weekdays (%)'

Three indicators were removed: Dental Morbidity, %TVET, Union Membership

Five new indicators were introduced based on panellist's suggestions to make the dimension more balanced and coherent. More information on the data sources can be found in Appendix C.

Dimension A: Demographic and Socio-Economic

Domain: Poverty

Indicator	Title	Source
Household Crowding	The proportion of children under 18 years and young people aged 18–24 years living in crowded households, i.e. a household that requires one or more additional bedrooms (*)	Children and Young People: Indicators of Wellbeing in New Zealand

Domain: Social indicator

Indicator	Title	Source
Internet Access in the Home	The number of children under 18 years and young people aged 18–24 years living in households with access to the internet, as a proportion of all children and young people.	Children and Young People: Indicators of Wellbeing in New Zealand

Dimension C: Health-Related Behaviour

Domain: Lifestyle Determinants

Indicator	Title	Source
Active Play	The proportion of children and young people participating in daily, unstructured unorganized play. (*)	National Physical Activity Plan

Domain: Mental Health

Indicator	Title	Source
Hospital-Treated Episodes of Deliberate Self-Harm	Hospital-treated episodes of deliberate self-harm, by gender and age group (0-4, 5-9, 10-14, 15-19, 20-24)	National Suicide Research Foundation

Dimension D: Health System and Policy

Domain: Participation and Engagement

Indicator	Title	Source
Participation in Sports Clubs, Leisure Time or Youth Clubs/Associations or Cultural Organisations	Proportion of children and young people reporting that they have participated in activities of a sports club, leisure time or youth club, any kind of youth association or cultural organisation in the last 12 months. (*)	European Commission

(*) = adapted title

Appendix J: Overview of Delphi Results

Participant Information

	Round One	Round Two	Round Three
Completed questionnaires returned (n)	179	69	55
Response Rate	Unknown	69/98 = 70.4%	55/98 = 56.1%
Location: Europe	92.6%	96.8%	97.9%
Country	1. Ireland (19.5%) 2. UK (10.7%) 3. Germany (8.1%)	1. Ireland (29%) 2. Germany (9.7%) 3. Malta (9.7%)	1. Ireland (25%) 2. Germany (8.3%) 3. UK (8.3%)
Occupation/Role	1. Researcher (36.2%) 2. Epidemiologist (14.8%) 3. Other (13.4%)	1. Researcher (41.9%) 2. Epidemiologist (11.3%) 3. Health policy advisor (9.7%) paediatrician (9.7%)	1. Researcher (47.9%) 2. Epi (14.6%) 3. Other (12.5%)
Organization	1. University/Third Level (52.3%) 2. National Government (20.8%) 3. Healthcare provider (12.1%)	1. University/Third Level (43.5%) 2. National Government (27.4%) 3. Health care provider (9.7%)	1. University/Third Level (54.2%) 2. National Government (20.8%) 3. Health Care Provider (10.4%)

The following table (page 231 – 237) presents the results for each individual indicator assessed per Delphi round.

Domain	Indicator	Delphi Rounds (n=total number of indicators)						
		Round One (n=94)		Round Two (n=96)			Round Three (n=53)	
		Rank	Importance (1-5)	Rank	Availability (%)	Potential (%)	Consensus (%)	
A. Demographic and Socio-Economic								
Mortality, Morbidity and Disability	Total Mortality Rates	1	5	1	100.0	-	95.8	√
	Selected Cause-Specific Mortality	2	5	2	92.9	-	95.8	√
	Abnormal BMI	3.5	5	3	36.4	65.0	82.0	»
	Disability Rate	-	4.5	4	67.2	45.5	80.8	»
	Asthma	4	4	5	47.5	68.4	-	
	Infectious Disease	4	4	6	92.3	-	-	
	Hospital Admissions Due to Injury	-	4	7	82.1	-	-	
	Dental Morbidity	6	4	-	-	-	-	
Poverty	Poverty (National)	1	5	1	89.1	-	100.0	√
	Jobless Households	2	5	2	84.9	-	100.0	√
	Inadequate Urban Housing	3	4	3	36.6	45.0	44.0	

	Child Labour	4	4	4	30.2	23.5	-	
	House Crowding *		-	5	43.5	35.3	-	
Crime and Protection	Child Abuse	1	5	1	37.9	15.0	91.7	»
	Sexual Violence	3	5	2	39.3	22.2	56.3	
	Female Partner Violence	4	5	3	22.6	18.2	33.3	
	Crime Victimization Rate	5	4	4	56.9	25.0	27.1	
	Human Trafficking	6	4	5	10.2	21.7	-	
	Early Age at Marriage/Union	6	4	6	66.7	78.6	-	
	Incarceration Rates	6	4	7	95.8	-	-	
	Intentional Homicide	6	4	8	100.0	-	-	
Social Indicators	Socio-Economic Circumstances	2	5	1	80.0	-	97.9	√
	Income	3	5	2	82.1	-	97.9	√
	Children in Care	4	4	3	86.4	-	97.9	√
	Access to Services	4	4	4	56.0	41.7	79.2	»
	Birth Registration	4	4	5	96.5	-	-	
	Asylum Seekers	5	4	6	84.9	-	-	
	Receipt of Child Benefit	6	4	7	86.4	-	-	

	Internet Access in the Home *		-	8	56.9	64.7	-	
B. Education and Employment								
Education	Educational Development	3	5	1	68.6	77.8	64.0	
	Education Completion Rate	3	5	2	100.0	-	93.9	√
	School Drop-out Rate	3	5	3	91.3	-	93.9	√
	Early Childhood Education Rate	4	4	4	79.2	-	93.9	√
	Early School Readiness	5	4	5	13.3	28.0	-	
	Educational Aspiration	6	4	6	7.7	32.1	-	
	ICT skills	7	4	7	25.6	26.3	-	
	Liking School	7	4	8	30.4	21.4	-	
	% Technical and Vocational Education and Training	8	4	-	-	-	-	
Employment	% NEET	2	5	1	75.6	-	93.9	√
	Unemployment Rate	2	5	2	95.7	-	93.9	√
	Income Equality	3	4	3	60.9	90.9	-	
	Financial Literacy and Savings	4	4	4	15.6	27.8	-	
C. Health-Related Behaviour								
	Tobacco Smoking	3	5	1	65.1	70.0	46.0	

Lifestyle Determinants	Alcohol Abuse	4	4	2	64.5	50.0	28.0	
	Physical Activity	4	5	3	56.3	69.2	62.0	
	Substance Misuse	4	5	4	62.1	60.0	20.0	
	Eating Behaviours: Eating fruit and vegetables	6	5	5	48.4	58.8	36.0	
	Eating Behaviours: Consuming soft drinks and sweets	6	5	6	46.7	58.8	22.0	
	Sedentary Behaviour, Watching Television and Screen Time	6	4	7	43.8	61.1	-	
	Leisure Activity	7	4	8	40.6	58.8	-	
	Eating Behaviours: Eating breakfast	7	4	9	47.5	60.0	-	
	Oral Health	9	4	10	49.1	53.3	-	
	Active Play *		-	11	12.3	34.6	-	
Disability and Injury	Disability Rate	1	4.5	Indicator moved. Domain merged with 'Mortality and Morbidity'				
	Hospital Admissions Due to Injury	2	4	Indicator moved. Domain merged with 'Mortality and Morbidity'.				
Mental Health	Prevalence of Depression & Anxiety	2	5	1	41.0	45.0	88.2	»
	Attempted Suicide	3	5	2	75.0	-	84.0	√
	Life Satisfaction	3	5	3	33.3	35.0	71.7	»
	Feeling of Loneliness	4	4	4	18.6	25.0	48.1	
	Suicide Ideation and Attempts	4	4	5	24.5	38.1	-	

	Mental Health Service Use	4	5	6	86.0	-	-	
	Hospital-Treated Episodes of Deliberate Self-Harm *		-	7	84.9	-	-	
Parental Determinants and Relationships	Being Bullied or Bullying Others	3	5	1	32.2	44.4	62.0	
	Parent-Child Communication	3	4	2	23.8	33.3	50.0	
	Parental Educational Attainment	3	4	3	71.4	44.4	42.0	
	Breastfeeding	4	4	4	60.6	61.5	52.0	
	Child in Single Parent Households	4	4	5	88.9	-	-	
	Close Friendships	4	4	6	20.8	22.2	-	
	Electronic Media Contact	6	4	7	26.9	31.3	-	
Reproductive and Sexual Health	Adolescent Birth Rate	3	4.5	1	100.0	-	92.0	√
	Sexually Transmitted Infections (STIs)	4	5	2	100.0	-	92.0	√
	Condom Use	4	5	3	38.5	42.9	67.3	
	Contraceptive Use	4	5	4	56.0	40.0	71.2	»
	Abortion Rate	4	4	5	53.1	30.8	-	
	Women Informed Decisions	5	4	6	14.3	22.7	-	
	Children and Young People AIDS Incidence Rate	6	4	7	92.6	-	-	

	Age at First Intercourse	6	4	8	53.2	33.3	-	
D. **Health System and Policy**								
Health and social policy	Gender Equality	2	5	1	73.9	50.0	56.0	
	Mental Health Policy	2	5	2	72.7	85.7	80.0	»
	Health Care for Marginalised Groups	3	5	3	52.9	50.0	64.0	
	Anti-Bullying Policies in Schools	4	4	4	55.0	72.7	-	
	Physical Punishment	4.5	4	5	62.5	37.5	-	
	Migration Policy	5	4	6	70.0	80.0	-	
Disability	Education Facilities	2	4.5	1	75.6	-	90.0	√
	Integration of People with Disabilities in Schools	2	5	2	74.5	62.5	82.7	»
	Integration of People with Disabilities into Employment	3	5	3	84.6	-	90.0	√
	Teacher Education	3	4	4	68.4	75.0	-	
Environment	Environmental Tobacco Smoke	2	5	1	83.3	-	88.0	√
	Exposure to Air Pollution	3	5	2	66.7	50.0	90.0	»
	Transportation Safety	3	5	3	75.0	-	88.0	√
	Provision of Public Spaces	3	5	4	63.6	62.5	-	

	Exposure to Hazardous Noise	5	4	5	48.7	25.0	-	
	Exposure to Lead	5	4	6	60.0	50.0	-	
Health Systems Quality	Immunisation Coverage	1	5	1	96.2	-	88.0	√
	Leukaemia 5-year Survival	2	4	2	91.3	-	88.0	√
	Parental Inpatient Accompaniment	3	4	3	44.2	50.0	-	
Participation and Engagement	Participation in Decisions	1	4	1	10.6	17.6	84.0	»
	Trust	2	4	2	7.3	25.0	68.0	
	Volunteering	3	4	3	23.1	61.5	46.0	
	Union Membership	4	3	-	-	-	-	
	Participation in Clubs *		-	4	38.5	70.0	-	

*Newly added indicators based on Round One feedback, - Indicator was not assessed, √ Indicator achieved consensus and was reported as widely available, » Indicator achieved consensus but was reported as not widely available

Round One (total number of indicators=94)

A: Demographic and Socio-Economic		B: Education and Employment		C: Health-Related Behaviour		D: Health System and Policy	
Mortality and Morbidity	6	Education	9	Lifestyle Determinants	10	Health and Social Policy	6
Poverty	4	Employment	4	Disability and Injuries	2	Disability	4
Crime and Protection	8			Mental Health	6	Environment	6
Social Indicators	7			Parental Determinants and Relationships	7	Health Systems Quality	3
				Reproductive and Sexual Health	8	Participation and Engagement	4
Total	**25**	**Total**	**13**	**Total**	33	**Total**	**23**

Round Two (total number of indicators=96)

A: Demographic and Socio-Economic		B: Education and Employment		C: Health-Related Behaviour		D: Health System and Policy	
Mortality, Morbidity and Disability	7	Education	8	Lifestyle Determinants	11	Health and Social Policy	6
Poverty	5	Employment	4	Mental Health	7	Disability	4
Crime and Protection	8			Parental Determinants and Relationships	7	Environment	6
Social Indicators	8			Reproductive and Sexual Health	8	Health Systems Quality	3
						Participation and Engagement	4
Total	**28**	**Total**	**12**	**Total**	**33**	**Total**	**23**

Round Three (total number of indicators=53)

A: Demographic and Socio-Economic		B: Education and Employment		C: Health-Related Behaviour		D: Health System and Policy	
Mortality, Morbidity and Disability	4	Education	4	Lifestyle Determinants	6	Health and Social Policy	3
Poverty	3	Employment	2	Mental Health	4	Disability	3
Crime and Protection	4			Parental Determinants and Relationships	4	Environment	3
Social Indicators	4			Reproductive and Sexual Health	4	Health Systems Quality	2
						Participation and Engagement	3
Total	**15**	**Total**	**6**	**Total**	**18**	**Total**	**14**

Final Set (total number of indicators=32)

A: Demographic and Socio-Economic		B: Education and Employment		C: Health-Related Behaviour		D: Health System and Policy	
Mortality, Morbidity and Disability	4	Education	3	Lifestyle Determinants	-	Health and Social Policy	1
Poverty	2	Employment	2	Mental Health	3	Disability	3
Crime and Protection	1			Parental Determinants and Relationships	-	Environment	3
Social Indicators	4			Reproductive and Sexual Health	3	Health Systems Quality	2
						Participation and Engagement	1
Total	**11**	**Total**	**5**	**Total**	**6**	**Total**	**10**