# Longstanding health conditions among three-year-old children in the Republic of Ireland in 2011

## A report based on data from the "Growing Up in Ireland" study

## Executive Summary

**Longstanding health conditions among three-year-old children in the Republic of Ireland in 2011: A report based on data from the "Growing Up in Ireland" study**

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Year: 2014


Institute of Public Health in Ireland

5th Floor
Bishop's Square
Redmond's Hill
Dublin 2

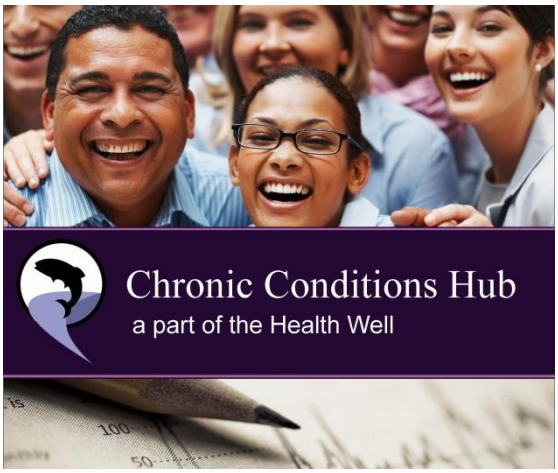
Forestview
Purdy's Lane
Belfast
BT8 7ZX

Ph: 00 353 1 4786300
Fax: 00 353 1 478 6319

0044 28 9064 8494
0044 28 9069 4409

www.publichealth.ie

The Institute of Public Health in Ireland (IPH) publishes estimates and forecasts of the prevalence of chronic health conditions for national and subnational areas on the island of Ireland. To date we have published data on the prevalence of chronic airflow obstruction, diabetes, coronary heart disease, hypertension, musculoskeletal conditions, and stroke among adults. This report extends this work to the prevalence of longstanding health conditions among children.




*Supporting practitioners and policy-makers working to prevent and manage chronic conditions*

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The Chronic Conditions Hub is a website that brings together information on chronic health conditions. It allows you to easily access, manage and share relevant information resources.

The Chronic Conditions Hub includes IPH estimates and forecasts of the number of adults with chronic conditions and children with longstanding conditions.

On the Chronic Conditions Hub you will find:

- Prevalence reports
- Technical documentation
- Detailed national and subnational data that can be downloaded or explored using the Health Well's Data Visualiser tool
- An interactive Chronic Conditions Prevalence Tool that allows you to calculate prevalence estimates for real or hypothetical populations and to explore "What if" scenarios.

# Contents

# Glossary of terms and abbreviations

### Confidence interval

Survey questions are usually asked of a proportion, or sample group, of the population rather than the full population. Even in the best-designed surveys, there will be random differences between the particular sample group selected and the full population. Therefore, any statistic taken from the sample group provides an estimate of the true value in the population. A confidence interval is a range of values around an estimate that shows how precise the estimate is. A narrow confidence interval is better because it means that we are confident that the true value in the population falls within a narrow range of the estimate. The estimate and its confidence interval is often written as "12% (95% CI = (10%, 14%))", which means that the estimate from the sample group is 12% and we are 95% confident that the true value in the population is between 10% and 14%.

### Effect modification / interaction

Effect modification occurs when the relationship between a characteristic (eg low birthweight) and an outcome (eg hearing problems) depends on the value of another characteristic (eg sex). In this example, the relationship between low birthweight and hearing problems is different for males and females. This is often called effect modification because the characteristic sex modifies the effect of low birthweight on hearing problems.

### GUI

Growing Up in Ireland National Longitudinal Study of Children

### IPH

Institute of Public Health in Ireland

### Longstanding illness, condition or disability

Growing Up in Ireland defined longstanding illness, condition or disability as anything that has troubled the child over a period of time or that is likely to affect the child over a period of time.

### Prevalence

The prevalence of a characteristic in a group is the number or per cent of the group who have the characteristic at a specific point in time or during a specific period of time.

## Statistical relationship between the prevalence of a condition and characteristics

A statistical relationship between the prevalence of a condition and a characteristic describes how prevalence changes as the characteristic changes. This does not mean that the characteristic causes the condition. You can describe the relationship between prevalence and one characteristic by analysing characteristics individually.

However, individual characteristics are often interrelated and combine in complex ways to influence prevalence. You can describe the relationship between prevalence and a number of characteristics by analysing the characteristics together. A statistical model of prevalence that analyses a number of characteristics together estimates the effect of each characteristic on prevalence while taking into account the effects of the other characteristics. The estimate is sometimes called the adjusted or independent effect of a characteristic, in the sense that this effect is not explained by the other characteristics. For example, we developed a statistical model to describe the relationship between the prevalence of a longstanding health condition and three characteristics together (child's sex, primary carer's health status and household social class) in the Growing Up in Ireland data.

## Statistical significance

A statistically significant result is one that is unlikely to occur by chance alone. For this report, a result is considered statistically significant if the probability of the result occurring by chance alone is less than one in twenty. This is often written as $p<0.05$. If we find a statistically significant result, such as a difference between two groups, we may conclude that there is a true difference between the groups.

# Longstanding health conditions

Longstanding health conditions among children can be associated with reduced quality of life for children and their families (Eiser, 1997; Varni et al, 2007), poorer socio-emotional development and behavioural problems (Turkel and Pao, 2007; Hysing et al, 2009; Williams et al, 2013), and poorer educational attainment (Layte and McCrory, 2010). They can result in substantial financial costs for families and the health and social care system.

The number or per cent of children living with a longstanding condition is known as its population prevalence. Reliable and valid prevalence estimates can be used to:

- Describe the pattern of health and ill-health in a population
- Identify determinants of current and future health and wellbeing
- Support evidence-informed policy development and practice
- Support evidence-informed planning of health and social care services.

# Policy context

There is increasing evidence from life course epidemiology that health experiences in early years of life are a determinant of later health and wellbeing (Marmot, 2010; World Health Organization, 2013). There is clear recognition of this in the current government policies: *Healthy Ireland: A Framework for Improved Health and Wellbeing* (Department of Health, 2013) and *Better Outcomes, Brighter Futures: The National Policy Framework for Children and Young People 2014–2020* (Department of Children and Youth Affairs, 2014). This study helps to inform a number of issues that these policies identify.

| |
|---|
| Identifying and reducing key risk factors for poor health and wellbeing (*Healthy Ireland* Actions 1.4, 2.7, 4.8; *Better Outcomes, Brighter Futures* Goals 12, 26) |
| Supporting parents and families in promoting and maintaining child health (*Healthy Ireland* Action 3.4; *Better Outcomes, Brighter Futures* Goals 1, 2, 3, 4) |
| Supporting local government and community groups in addressing health and wellbeing (*Healthy Ireland* Actions 1.9, 2.2, 2.3, 5.3, 6.5; *Better Outcomes, Brighter Futures* Goals 2, 47, 51, 52, 62, 68) |

# Research and information context

Although there is no national child health information system that integrates existing sources of child health data such as public health nurse visits, surveillance and screening, there are a number of national research and information initiatives on the lives and health

of children such as the *National Strategy for Research and Data on Children's Lives 2011–2016* (Department of Children and Youth Affairs, 2011), the Growing Up in Ireland (GUI) National Longitudinal Study of Children (upon which this report is based), the National Set of Child Wellbeing Indicators, and the Department of Children and Youth Affairs' Children's Database of research and information resources.

Current policies and strategies identify research and information gaps and include a number of recommendations which this study addresses.

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| Promoting the improvement and maximum use of existing data sources such as GUI (*Healthy Ireland* Action 6.8; *National Strategy for Research and Data on Children's Lives 2011–2016* Action area 2) |
| Developing indicators on health status (*Healthy Ireland* Actions 6.6, 6.7; *Better Outcomes, Brighter Futures* Goals 56, 57) |
| Estimating prevalence rates for specified conditions (*National Strategy for Research and Data on Children's Lives 2011–2016* Action C13) |
| Improving understanding of the factors affecting health and wellbeing among children (*National Strategy for Research and Data on Children's Lives 2011–2016* Action B1) |
| Providing relevant local data to support local government and community groups (*Healthy Ireland* Actions 2.3, 5.3, 6.5; *Better Outcomes, Brighter Futures* Goals 62, 68). |

# Aims

The study provides estimates of the national and subnational population prevalence of longstanding health conditions among three-year-old children in Ireland in 2011. It:

- Contains national estimates of the prevalence of a longstanding illness, condition or disability, asthma, eczema/skin allergy, sight problems and hearing problems
- Describes how national prevalence varies with important characteristics and identifies groups of children and their families who are experiencing a greater burden of these conditions
- Describes how the prevalence of these conditions varies across the 29 administrative counties and five cities in Ireland (see main report for details of subnational prevalence).

# Method

The prevalence estimates are based on Wave Two of the Infant Cohort of GUI when the children were aged three years. The child's primary carer was asked about longstanding health conditions that the child may have experienced. The national estimate of the per cent of three-year-olds with each condition is based on the per cent of the GUI sample with that condition. These GUI sample per cents were applied to population counts from Census 2011 to estimate the number of three-year-olds with each condition.

A statistical model was developed for each condition to describe how the condition's prevalence varied with important child, carer, household and neighbourhood characteristics in the survey data. A condition's statistical model divided the children into groups defined by these characteristics and provided an estimate of the per cent of children having the condition in each of these groups.

# Key Findings

## Longstanding illness, condition or disability

We estimated that more than 11,000 (15.8%; 95% CI = (14.9%, 16.6%)) three-year-olds in Ireland had a carer-reported "longstanding illness, condition or disability" (as defined by the GUI survey question) in 2011.

The prevalence of a longstanding illness, condition or disability varied significantly with the following characteristics when the characteristics were analysed individually: Child's sex, Child's birthweight, Primary carer's health status, Maternal smoking during pregnancy, Primary carer smoking, Number of parents in the household, Household social class, General Medical Services (GMS) scheme status, Layout of the home.

A statistical model was used to identify those characteristics that had a significant relationship with having a longstanding illness, condition or disability when the characteristics were analysed together. The box below shows the characteristics that had significant independent effects that were not explained by other characteristics.

| **Characteristics with significant independent effects after adjusting for the other characteristics** | **Effect on the prevalence of a longstanding illness, condition or disability** |
|---|---|
| Child's sex | A longstanding illness, condition or disability was significantly more likely among males.<br><br>There was no evidence that the effect of child's sex was modified by the other characteristics. |
| Primary carer's health status: having a primary carer with a longstanding illness, condition or disability | A longstanding illness, condition or disability was significantly more likely among children whose primary carer had a longstanding condition.<br><br>There was no evidence that the effect of primary carer's health status was modified by the other characteristics. |
| Household social class | A longstanding illness, condition or disability was significantly more likely among children in households with the lowest social class.<br><br>There was no evidence that the effect of household social class was modified by the other characteristics. |

## Diagnosed asthma or asthma symptoms

We estimated that more than 6,600 (9.5%; 95% CI = (8.8%, 10.2%)) three-year-olds in Ireland had carer-reported diagnosed asthma/asthma symptoms in 2011. This consisted of:

- More than 2,200 (3.2%; 95% CI = (2.8%, 3.6%)) three-year-olds with diagnosed and controlled asthma
- Almost 1,800 (2.5%; 95% CI = (2.1%, 2.9%)) three-year-olds with diagnosed and uncontrolled asthma
- More than 2,600 (3.8%; 95% CI = (3.3%, 4.2%)) three-year-olds with undiagnosed asthma symptoms. Although some of these children may not have asthma, the findings suggest that almost two in five cases of carer-reported asthma/asthma symptoms among three-year-olds were undiagnosed.

The prevalence of diagnosed asthma/asthma symptoms varied significantly with the following characteristics when the characteristics were analysed individually: Child's sex, Child's birthweight, Child's allergy status, Primary carer's health status, Maternal smoking during pregnancy, Breastfeeding, Primary carer smoking, Number of parents in the household, Household social class , Primary carer's education, General Medical Services (GMS) scheme status, Private health insurance status, Home conditions.

A statistical model was used to identify those characteristics that had a significant relationship with having diagnosed asthma/asthma symptoms when the characteristics were analysed together. The box below shows the characteristics that had significant independent effects that were not explained by other characteristics.

| **Characteristics with significant independent effects after adjusting for the other characteristics** | **Effect on the prevalence of diagnosed asthma/asthma symptoms** |
|---|---|
| Child's allergy status: whether or not the child had a diagnosed respiratory, skin (including eczema), food, or non-food allergy | Each of the three categories of diagnosed asthma/asthma symptoms was significantly more likely among children with an allergy. The magnitude of the effect depended on the primary carer's health status; it was greater among children whose primary carer did not have a longstanding condition.<br><br>There was no evidence that the effect of child's allergy status was modified by number of parents in the household. |
| Primary carer's health status: having a primary carer with a longstanding illness, condition or disability | The effect of primary carer's health status depended on the child's allergy status:<br>• Child did not have an allergy: Diagnosed and controlled asthma and diagnosed and uncontrolled asthma were significantly |

| Characteristics with significant independent effects after adjusting for the other characteristics | Effect on the prevalence of diagnosed asthma/asthma symptoms |
|---|---|
| | more likely among children whose primary carer had a longstanding condition<br>• Child had an allergy: No significant effect.<br><br>There was no evidence that the effect of primary carer's health status was modified by number of parents in the household. |
| Number of parents in the household | Each of the three categories of diagnosed asthma/asthma symptoms was significantly more likely among children in households with one parent.<br><br>There was no evidence that the effect of the number of parents in the household was modified by the other characteristics. |

## Diagnosed eczema or any kind of skin allergy

We estimated that more than 2,800 (4.0%; 95% CI = (3.6%, 4.5%)) three-year-olds in Ireland had carer-reported diagnosed eczema/skin allergy in 2011.

The prevalence of diagnosed eczema/skin allergy varied significantly with the following characteristics when the characteristics were analysed individually: Child's sex, Child's non-skin allergy status, Primary carer's health status.

A statistical model was used to identify those characteristics that had a significant relationship with having diagnosed eczema/skin allergy when the characteristics were analysed together. The box below shows the characteristics that had significant independent effects that were not explained by other characteristics.

| **Characteristics with significant independent effects after adjusting for the other characteristics** | **Effect on the prevalence of diagnosed eczema/skin allergy** |
|---|---|
| Child's sex | Diagnosed eczema/skin allergy was significantly more likely among males.<br><br>There was no evidence that the effect of child's sex was modified by the other characteristics. |
| Child's non-skin allergy status: whether or not the child had a diagnosed respiratory, food, or non-food allergy | Diagnosed eczema/skin allergy was significantly more likely among children with a non-skin allergy. The magnitude of the effect depended on the primary carer's health status; it was greater among children whose primary carer did not have a longstanding condition.<br><br>There was no evidence that the effect of child's non-skin allergy status was modified by child's sex. |
| Primary carer's health status: having a primary carer with a longstanding illness, condition or disability | The effect of primary carer's health status depended on the child's non-skin allergy status:<br>• Child did not have a non-skin allergy: Diagnosed eczema/skin allergy was significantly more likely among children whose primary carer had a longstanding condition<br>• Child had a non-skin allergy: No significant effect.<br><br>There was no evidence that the effect of primary carer's health status was modified by child's sex. |

## Sight problem that required correction

We estimated that more than 4,100 (5.9%; 95% CI = (5.3%, 6.5%)) three-year-olds in Ireland in 2011 had ever had a carer-reported sight problem that required correction.

The prevalence of sight problems varied significantly with the following characteristics when the characteristics were analysed individually: Child's birthweight, Child's body mass index, Primary carer's health status, Maternal smoking during pregnancy, Breastfeeding, Number of parents in the household, Household social class, Household income, Primary carer's education, General Medical Services (GMS) scheme status, Private health insurance status, Layout of the home.

A statistical model was used to identify those characteristics that had a significant relationship with having sight problems when the characteristics were analysed together. The box below shows the characteristics that had significant independent effects that were not explained by other characteristics.

| **Characteristics with significant independent effects after adjusting for the other characteristics** | **Effect on the prevalence of ever had a sight problem that required correction** |
|---|---|
| Child's birthweight: whether or not the child had a low birthweight | Sight problems were significantly more likely among children who had a low birthweight.<br><br>There was no evidence that the effect of child's birthweight was modified by the other characteristics. |
| Maternal smoking during pregnancy | Sight problems were significantly more likely among children whose mother smoked during pregnancy.<br><br>There was no evidence that the effect of maternal smoking during pregnancy was modified by the other characteristics. |
| Household social class | Sight problems were significantly more likely among children in households with the lowest social class or the second highest social class.<br><br>There was no evidence that the effect of household social class was modified by the other characteristics. |

## Hearing problem that required correction

We estimated that more than 2,700 (3.9%; 95% CI = (3.4%, 4.3%)) three-year-olds in Ireland in 2011 had ever had a carer-reported hearing problem that required correction.

The prevalence of hearing problems varied significantly with the following characteristics when the characteristics were analysed individually: Child's sex, Child's birthweight, Child's body mass index, Primary carer's health status, Breastfeeding, Household social class, Household income, Primary carer's education, Private health insurance status.

A statistical model was used to identify those characteristics that had a significant relationship with having a hearing problem when the characteristics were analysed together. The box below shows the characteristics that had significant independent effects that were not explained by other characteristics.

| **Characteristics with significant independent effects after adjusting for the other characteristics** | **Effect on the prevalence of ever had a hearing problem that required correction** |
|---|---|
| Child's sex | Hearing problems were significantly more likely among males. The magnitude of the effect depended on the child's birthweight; it was greater among children who had a low birthweight.<br><br>There was no evidence that the effect of child's sex was modified by primary carer's health status or private health insurance status. |
| Child's birthweight | The effect of child's birthweight depended on the child's sex:<br>• Females: No significant effect<br>• Males: Hearing problems were significantly more likely among children with a low birthweight.<br><br>There was no evidence that the effect of child's birthweight was modified by primary carer's health status or private health insurance status. |
| Primary carer's health status: having a primary carer with a longstanding illness, condition or disability | Hearing problems were significantly more likely among children whose primary carer had a longstanding condition.<br><br>There was no evidence that the effect of primary carer's health status was modified by the other characteristics. |
| Private health insurance status: whether or not the child was covered by private health insurance. | Hearing problems were significantly more likely among children who were covered by private health insurance.<br><br>There was no evidence that the effect of private health insurance status was modified by the other characteristics. |

# Policy and information implications

The data reported here on the prevalence of longstanding conditions and the characteristics that influence them are useful for addressing current policy issues. It is vital that policy-relevant research and information is quickly translated into policy and practice development.

The data on how prevalence varies with important child, carer, household and neighbourhood characteristics help identify key risk factors for poor health and wellbeing (*Better Outcomes, Brighter Futures* Goal 12) among children and groups of children who are at greater risk (*Healthy Ireland* Actions 2.7, 4.8; *Better Outcomes, Brighter Futures* Goal 26). The study shows that it is not just the biological or health status characteristics of the child that are important but also broader carer and household characteristics. It provides further evidence of the social determinants of health inequalities, as children in households with lower social class or one parent families were more likely to have higher prevalence. Although this finding is far from new, it emphasises the need to increase our efforts to tackle these inequalities and to give all children a fair chance of health and wellbeing. Parents and health professionals should be familiar with the characteristics that place children at higher risk of longstanding conditions, to improve the chances of prevention or early detection and intervention. It is important to note that many of these characteristics can be changed and they offer a focus for policy and service interventions to reduce risk factors (*Healthy Ireland* Action 1.4) and improve the lives of children and their families.

Supporting parents and families is recognised in policy as a key aspect of promoting and maintaining the health of children in both *Healthy Ireland* (Action 3.4) and *Better Outcomes, Brighter Futures* (Goals 1, 2, 3, 4). This study identifies groups of parents and families (such as primary carers with a longstanding condition, one parent families, and households with lower social class) that may have a greater need for support in caring for children with longstanding health conditions. An important part of supporting parents and families is promoting the health and health behaviours of mothers. Primary carer's health status, maternal smoking during pregnancy, and low birthweight were related to higher prevalence of longstanding conditions among children; addressing these characteristics in the population may reduce the prevalence of longstanding conditions among children. Furthermore, the findings in relation to low birthweight and maternal smoking during pregnancy emphasise that child health promotion starts in the womb.

The subnational prevalence estimates highlight administrative counties and cities where we would expect to see higher prevalence of longstanding conditions based on the characteristics of the area. The estimates can inform local government and community groups and help them to address local health and wellbeing (*Healthy Ireland* Actions 1.9, 2.2, 2.3, 5.3, 6.5; *Better Outcomes, Brighter Futures* Goals 2, 47, 51, 52, 62, 68).

The study contributes to the research and information recommendations identified in current policies. It used existing data sources (*Healthy Ireland* Action 6.8; *National Strategy for Research and Data on Children's Lives 2011–2016* Action area 2) to estimate health status (*Healthy Ireland* Actions 6.6, 6.7; *Better Outcomes, Brighter Futures* Goals 56, 57) and prevalence rates for specified conditions (*National Strategy for Research and Data on Children's Lives 2011–2016* Action C13) and to better understand the factors affecting health and wellbeing among children (*National Strategy for Research and Data on Children's Lives 2011–2016* Action B1). Data on the prevalence of longstanding conditions for administrative counties/cities support local government and community groups with local data for planning and delivering local initiatives to address local issues (*Healthy Ireland* Actions 2.3, 5.3, 6.5; *Better Outcomes, Brighter Futures* Goals 62, 68). As noted above, better local data on the characteristics related to prevalence would allow us to produce better local prevalence estimates.

# Conclusions

Longstanding health conditions are common among three-year-old children in Ireland.

The burden of these conditions is unequally distributed across the three-year-old population.

There are a number of characteristics that explain the variation in prevalence of these conditions. The variation in prevalence showed that prevalence increased as children accumulated more of these characteristics. These characteristics can be used to identify groups of children and their families who are experiencing a greater burden of these conditions and who may be in need of greater support.

The majority of the characteristics that influence the prevalence of longstanding conditions can be changed by policies and services that aim to improve health status, health behaviours, socio-economic status and living conditions. They offer a focus for policy and service interventions to improve the lives of children and their families.

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Institute of Public Health in Ireland

5th Floor
Bishops Square
Redmond's Hill
Dublin 2

Ph: 00 353 1 4786300
Fax: 00 353 1 478 6319

Forestview
Purdy's Lane
Belfast
BT8 7AR

0044 28 9064 8494
0044 28 9069 4409

www.publichealth.ie