Assessment of training needs of Health Care Professionals who provide foetal, maternal and infant nutrition advice

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This research and review was carried out by the National Nutrition Surveillance Centre, in partnership with the Health Service Executive (HSE), as part of the HSE Framework for Action on Obesity

Abstract

It is widely recognized that foetal nutrition is essential for optimal intra-uterine growth and that the nutritional requirements and feeding patterns of babies and infants will impact not only on growth and development during the early years, but also on disease in later life. For these reasons it is essential that health professionals should provide advice on healthy living to both expectant mothers and parents that is relevant, manageable and directed at individual circumstances.

A questionnaire was developed in order to identify the knowledge and training needs of healthcare professionals with regard to foetal, maternal nutrition and feeding practices. Dietitians, GPs, and Practice Nurses were targeted in this questionnaire. The response rate among the three groups was: GPs 28% (n=226), Practice Nurses 38% (n=210), and Dietitians 32% (n=162).

These healthcare professionals have the opportunity to endorse health promotion regarding foetal, maternal nutrition and feeding practices due to their frequent contact with expectant mothers and parents. The responses from the Healthcare professionals indicated that they needed further training or updating in maternal nutrition (GPs 39%, Dietitians 56%, and Practice Nurses 63%) as well as feeding practices (GPs 61%, Dietitians 64%, and Practice Nurses 81%) and complementary feeding (GPs 40%, Dietitians 52%, and Practice Nurses 74%).

Respondents were asked to specify the main sources of their maternal and infant feeding nutrition knowledge. For GPs, the main source was personal experience (47%), whereas the main source for Dietitians and Practice Nurses was professional experience (59% and 51% respectively). Eighty three percent of GPs agreed that they were confident about giving advice during pregnancy, while 78% of Dietitians and 73% of Practice Nurses agreed. Confidence in giving advice about infant feeding was slightly lower, with 77% of GPs, 62% of Dietitians and 66% of Practice Nurses agreeing with this statement. With regards to giving advice on complementary foods, 80% of GPs, 71% of Dietitians and 69% of Practice Nurses agreed they were confident on giving advice on this subject. This was reflected in their knowledge of nutrition guidelines and recommendations. Overall, there seemed to be good knowledge and awareness of key issues although the findings would indicate that there are variations in the advice given and different levels of knowledge.

Introduction

It is widely accepted that foetal nutrition is important for optimal intra-uterine growth and that the nutritional requirements and feeding patterns of babies and infants will impact not only on growth and development during the early years, but also on disease in later life. For these reasons it is essential that health professionals should provide advice on healthy living to expectant mothers and parents that is relevant, manageable and directed at individual circumstances. In response, the National Nutrition Surveillance Centre (NNSC), in partnership with the Health Service Executive (HSE), as part of the HSE Framework for Action on Obesity assessed the training needs and knowledge of health professionals who provide foetal, maternal nutrition and feeding practices advice. This Training Needs Assessment Questionnaire was designed by the NNSC in the School of Public Health and Population Science, UCD. GPs, Dietitians, and Practice Nurses were targeted in this questionnaire as they have an important role in this area due to their frequent contact with expectant mothers and parents. Public Health Nurses also play an important role in providing this advice, however their training needs and knowledge was assessed in a previous study carried out by Researchers at UCD. The summary of these findings are included in the discussion section of this report.

Research has highlighted that poor intra-uterine growth is associated with an increased risk of cardiovascular disease, non-insulin dependent diabetes mellitus and the metabolic syndrome in adult life[1]. For these reasons it is important that women who are planning to become pregnant are offered nutrition advice and education as a balanced diet is essential for the healthy growth of the baby and the wellbeing of the mother. Scientific studies are also highlighting that nutritional status early in life may influence health in later life[2]. The source of nutrition for infants and those in early childhood consists of breast milk, formula milk and complementary foods. During the early months of life it is widely acknowledged that exclusive breastfeeding provides optimal nutrition and is the preferred infant feeding method conferring both nutritional and non-nutritional advantages to the infant as well as benefiting the mother[3-5]. Despite the numerous public health campaigns promoting breast feeding practice in Ireland, initiation rates remain low with particularly low continuation rates[6]. For many years, Irish government policy has been to increase the rates of breastfeeding based on the strong evidence base of the health benefits conferred on mothers and children[3]. Several studies have been conducted to examine the

factors that contribute to low breast feeding rates- many factors have been identified including the role of health professionals and the advice and support that they provide[7,8].

The introduction of complementary foods in infants is necessary to meet both nutritional and developmental needs. However, in contrast to the scientific support for breastfeeding, the evidence base for complementary feeding is less clear as there are differing opinions regarding the optimal time for the introduction of complementary foods as well as the most suitable foods to introduce. The WHO recommends exclusive breastfeeding for the first six months of life[4] while the European Society of Pediatric Gastroenterology Hepatology and Nutrition Committee (ESPGHAN) on Nutrition recommends the introduction of complementary foods at 4-6 months[5]. This has led to different recommendations within different countries and in addition, many studies have shown that complementary foods are introduced much earlier than the recommended age[9]. In Ireland, it is recommended that exclusive breastfeeding for the first six months of life is sufficient to support optimal growth and development and it is recommended to continue breastfeeding in combination with suitable complementary foods to two years of age and beyond. For formula fed infants, it is recommended that the introduction of complementary foods should also be at six months and these infants should continue to receive formula milk until the end of the first year and then be given full fat cow's milk[10]. The HSE website on breastfeeding, (breastfeeding.ie) states that advice on breastfeeding and introducing complementary foods may be sought from a GP, Public Health Nurse or Practice Nurse. In addition, Dietitians will also provide nutrition support for mothers and parents. For this reason, it is important to ascertain if these health professionals feel competent and knowledgeable to provide evidence based advice.

Methods

Study population and Design

A 3-page questionnaire was posted to 800 random members of The Irish College of General Practitioners, to 550 members of The Irish Practice Nurses Association, and to 450 members of The Irish Nutrition and Dietetic Institute. The response rate among the three groups was: GPs 28% (n=226), Dietitians 32% (n=162) and Practice Nurses 38% (n=210).

Measures

The same questionnaire was sent to all professional groups. The development of the questionnaire was conducted via a comprehensive review of the literature and discussions with health professionals who work in this area. First all respondents were asked how they had acquired their nutrition knowledge in the areas of pregnancy, feeding practices and complementary feeding how confident they were to advice patients on these topics and where they felt they required further training. To assess knowledge, respondents were asked a series of questions on maternal nutrition and feeding practices. Respondents were also asked their personal demographic characteristics and whether they felt their own personal experiences influenced the advice they gave.

Data Analysis

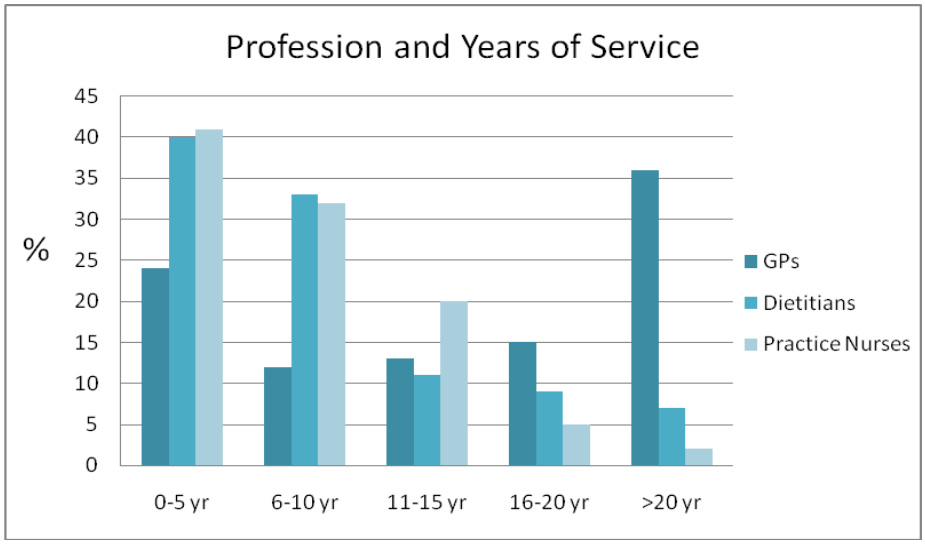
Data was stored in data sheets in SPSS. The data was anonymised at the point of data entry and analysed.

Demographic information

The majority of Practice Nurses (100%) and Dietitians (98%) who responded to the survey were female. There was a more equal distribution for GPs with 49% of males and 51% of females responding to the survey.

In terms of professional experience the GPs had the highest proportion of respondents who indicated that they had been in practice for over 20 years (36%) (Figure 1). The majority of Practice Nurses and Dietitians had been in practice between 1 and 10 years (Figure 1). With regards training, 69% of Dietitians, 79% of Practice Nurses and 87% of GPs had trained in Ireland.

Figure 1. Profession and years of service



Parental status and Personal experience

The overall majority of Practice Nurses (88%) and GPs (82%) were parents compared with only 33% of Dietitians. The questionnaire also asked repsondents to rate their agreement to the statement 'My personal experience of pregnancy, feeding and weaning influences the advice I give to parents'. Forty seven percent of GPs, 52% of Dietitians and 38% of Practice Nurses agreed with this statement (Table 1).

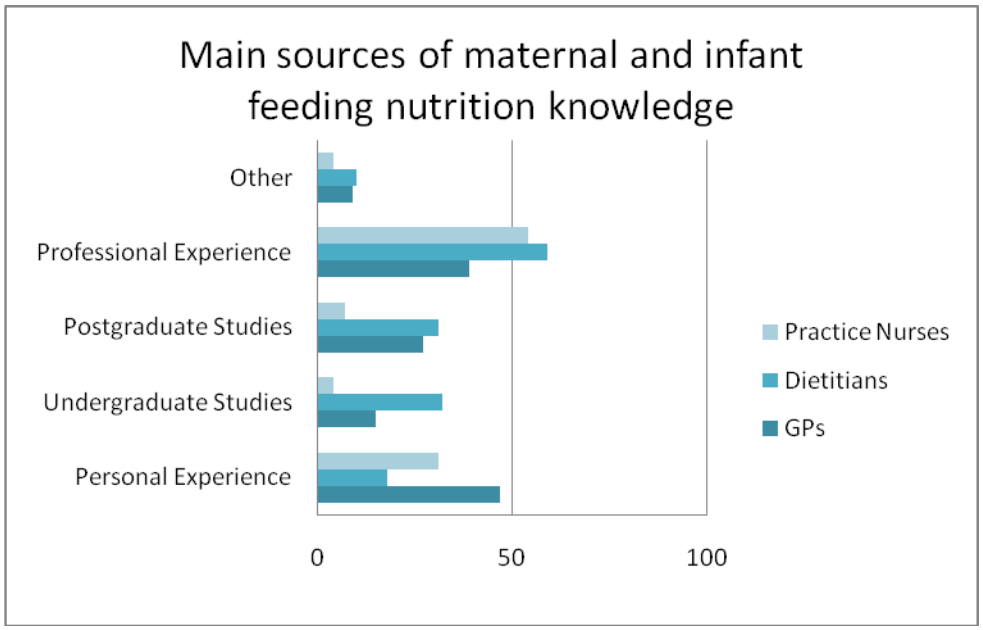
Table 1. Influence of parental experience on advice provided

	GPs	Dietitians	Practice Nurses
Strongly agree	12%	43%	8%
Agree	35%	9%	30%
Neither agree nor disagree	40%	20%	42%
Strongly disagree	10%	17%	13%
Disagree	3%	9%	5%
Not applicable	<1%	2%	2%

Training

Respondents were asked to specify the main sources of their maternal and infant feeding nutrition knowledge (Figure 2). For GPs, the main source was personal experience (47%), whereas the main source for Dietitians and Practice Nurses was professional experience (59% and 51% respectively). Undergraduate and postgraduate studies contributed highly to GPs and Dietitians knowledge (42% and 63% respectively) although this accounted for only 10% of Practice Nurses knowledge.

Figure 2. Main sources of maternal and infant feeding nutrition knowledge



Respondents were also asked to specify during the last two years, how they had acquired information about nutrition during pregnancy and infant feeding. Professional journals followed by HSE leaflets were the most common sources of information for GPs and Practice Nurses (Tables 2 and 3). Dietitians cited discussions with colleagues as the most common source of their nutrition knowledge of nutrition during pregnancy and feeding practices in the past two years (Tables 2 and 3).

Table 2. Sources of information regarding nutrition during pregnancy during the past 2 years

	GPs	Dietitians	Practice Nurses
Professional journals	58%	63%	78%
HSE leaflets	36%	61%	60%
Internet	24%	50%	34%
General Media	26%	21%	29%
Child Nutrition Panel	1%	12%	6%
Discussions with colleagues	35%	71%	45%
HSE Study day	4%	7%	13%
Other	19%	25%	16%

Table 3. Sources of nutrition information regarding infant feeding during the past 2 years

	GPs	Dietitians	Practice Nurses
Professional journals	50%	62%	73%
HSE leaflets	27%	51%	52%
Infant formula manufacturers' leaflets	24%	50%	52%
Infant formula manufacturers' events	4%	36%	35%
Internet	18%	38%	26%
General media	24%	15%	21%
Child nutrition panel	2%	11%	1%
Discussions with colleagues	39%	65%	34%
HSE study days	1%	12%	14%

Other	20%	33%	15%

Confidence

Figures 3-5 shows that the majority of respondents felt confident in giving advice about nutrition during pregnancy, infant feeding and complementary feeding. Eighty three percent of GPs strongly agreed or agreed that they were confident about giving advice during pregnancy, while 78% of Dietitians and 73% of Practice Nurses strongly agreed or agreed with this. Confidence in giving advice about infant feeding was slightly lower, with 77% of GPs, 62% of Dietitians and 66% of Practice Nurses strongly agreeing or agreeing with this statement. Some health professionals commented that they were confident about giving advice regarding breast-feeding practices but were not as confident about giving advice on formula feeds. With regards to giving advice on weaning foods, 80% of GPs, 71% of Dietitians and 69% of Practice Nurses strongly agreed or agreed they were confident on giving advice on this subject.

Figure 3. Confidence in giving advice about nutrition during pregnancy

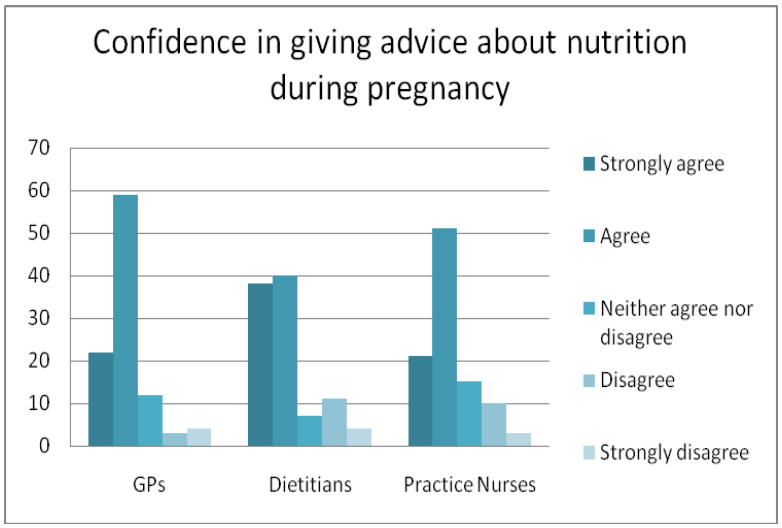


Figure 4. Confidence in giving advice about infant feeding

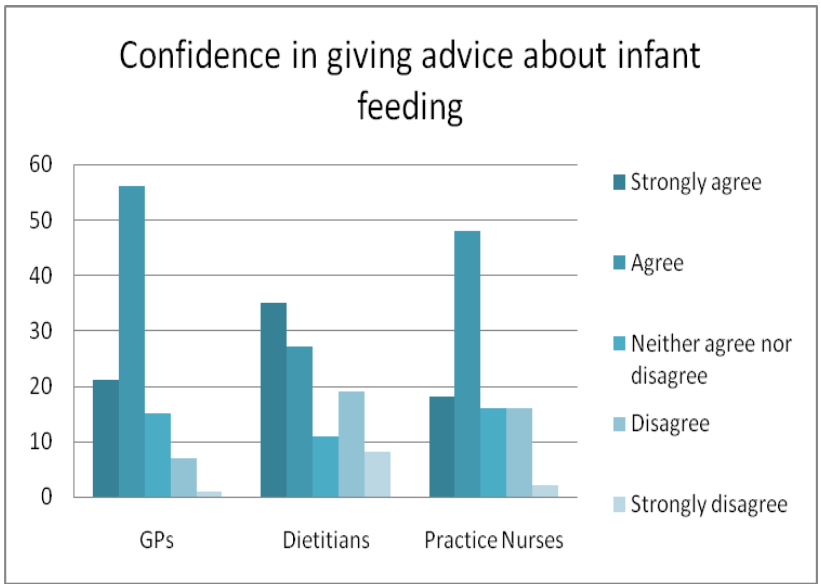
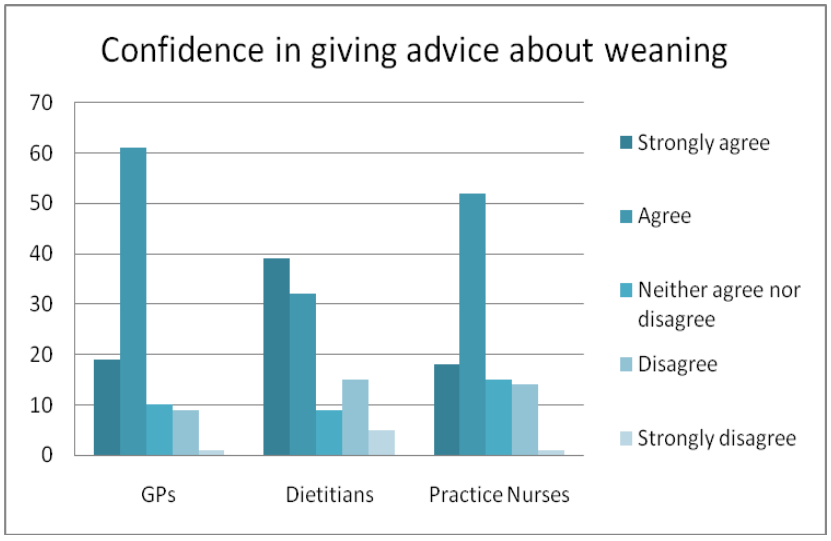


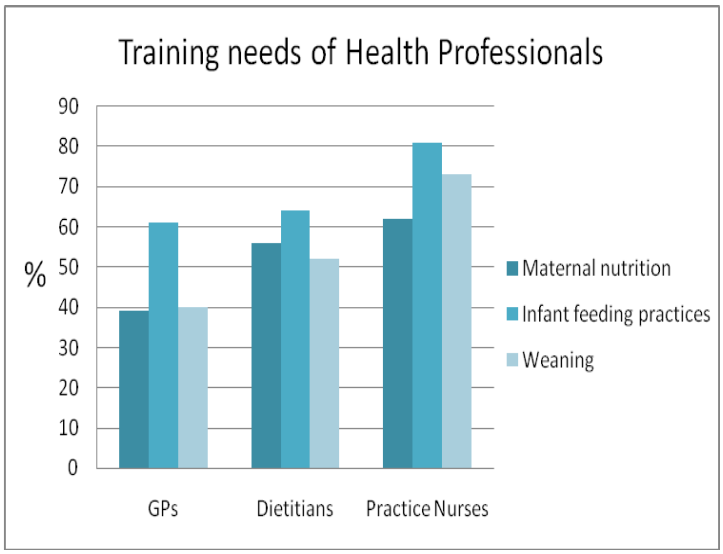
Figure 5. Confidence in giving advice about weaning



Training Needs

All health professionals were asked if they felt they required further training or updating in the areas of maternal nutrition, infant feeding practices and complementary feeding (Figure 6). The highest response for further training or updating came from Practice Nurses and particularly in the area of infant feeding practices. This was followed by the Dietitians and then the GPs. Further training or updating in the area of infant feeding practices rated highly for all professions.

Figure 6. Training needs of health professionals



Knowledge

Recommended age to introduce complementary foods

Health professionals were asked the recommended age to introduce complementary foods to breast fed and formula fed infants (Table 4). The majority of health professionals recommended that complementary foods be introduced at 26 weeks (six months) for breast fed infants which is in line with current Irish recommendations. In Ireland, it is currently recommended that complementary feeding commence from 17-26 weeks in formula fed infants. Health Professionals with the exception of Practice Nurses were more likely to recommend 26 weeks as the recommended age to introduce complementary foods in formula fed infants.

Table 4. Recommended age for the introduction of complementary foods

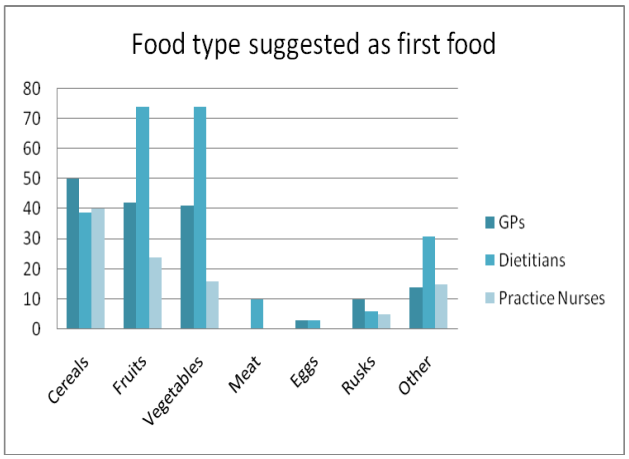
		Recommended age for breastfed babies	Recommended age for formula fed infants
GPs	<17 wks	6%	7%
	17-26 wks	26%	40%
	26 wks	62%	50%
	>26 wks	5%	3%
Dietitians	<17 wks	1%	8%
	17-26 wks	5%	28%
	26 wks	92%	62%
	>26 wks	2%	2%
Practice Nurses	<17 wks	2%	2%
	17-26 wks	23%	51%
	26 wks	70%	45%
	>26 wks	5%	2%

Recommended first foods

Fruits and vegetables were the most often recommended first foods followed by cereals (Figure 7). Those who ticked 'other' indicated that the first food they advised was baby rice.

Figure 7. Food Type suggested as first food

(Each opinion is a separate variable and the table therefore does not sum to a hundred percent)



Awareness of risks of early and late weaning

Dietitians were most likely to consider that there are health risks associated with early (90%) and late (92%) weaning (Table 5). GPs and Practice Nurses were less likely to identify risks associated with early weaning and particularly with late weaning (Table 5). The most commonly identified risks associated with early weaning included allergy, obesity, immature digestive system, Coeliac disease, and risk of choking. Anaemia and nutrition deficiencies were most often cited as risks associating with late weaning. Other concerns included developmental issues such as speech development and resistance to new foods and tastes.

Table 5. Awareness of risks of early and late weaning

	Early Weaning Yes	Early Weaning No/Not sure	Late Weaning Yes	Late Weaning No/Not sure
GPs	66%	34%	55%	45%
Dietitians	90%	10%	92%	8%
Practice Nurses	78%	22%	52%	48%

Recommended age for introducing specific foods

Respondents were asked to indicate the recommended age for the introduction of a variety of complementary foods (Tables 6-8). This question was left blank by a large numbers of respondents with many health professionals commenting that they did not know the answers to these questions. These recommendations were based on the European guidelines from ESPGHAN which are for both breast fed and formula fed infants. Overall, there was good understanding of avoiding wheat before 24 weeks and cow's milk before 52 weeks. It is recommended that cow's milk should not be introduced as a main drink before one year, although it may be used in small quantities to mix other foods. Many respondents who indicated that cow's milk should not be used as a main drink before one year also included this comment. In addition there was greater confusion over the timing of the introduction of foods such as nuts, yoghurt and honey.

Table 6. Recommended age for introducing specific foods; GPs response

	Recommended age	Early	On time/Later	No response
Wheat	Over 24 wks	14%	50%	36%
Rice	Over 17 wks	23%	45%	32%
Cow's Milk	Over 52 wks	16%	55%	29%
Meat	Over 17 wks	4%	61%	35%
Poultry	Over 17 wks	4%	61%	35%
Fish	Over 24 wks	10%	54%	36%
Eggs	Over 24 wks	9%	56%	35%
Yoghurt	Over 24 wks	18%	46%	36%
Honey	Over 52 wks	26%	33%	41%
Fruit	Over 17 wks	15%	52%	33%
Vegetables	Over 17 wks	15%	52%	33%
Nuts	Over 156 wks	45%	11%	44%

Table 7. Recommended age for introducing specific foods; Dietitians response

	Recommended age	Early	On time/Later	No response
Wheat	Over 24 wks	7%	69%	24%
Rice	Over 17 wks	9%	64%	27%
Cow's Milk	Over 52 wks	32%	41%	27%
Meat	Over 17 wks	2%	73%	25%
Poultry	Over 17 wks	2%	73%	25%

Fish	Over 24 wks	1%	72%	27%
Eggs	Over 24 wks	5%	66%	29%
Yoghurt	Over 24 wks	17%	55%	28%
Honey	Over 52 wks	13%	46%	41%
Fruit	Over 17 wks	9%	66%	25%
Vegetables	Over 17 wks	10%	65%	25%
Nuts	Over 156 wks	28%	36%	36%

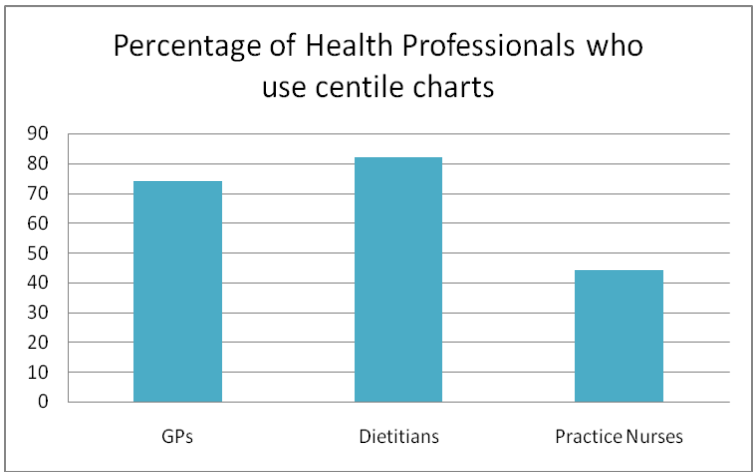
Table 8. Recommended age for introducing specific foods; Practice Nurses response

	Recommended age	Early	On time/Later	No response
Wheat	Over 24 wks	10%	59%	31%
Rice	Over 17 wks	25%	51%	24%
Cow's Milk	Over 52 wks	6%	72%	22%
Meat	Over 17 wks	3%	70%	27%
Poultry	Over 17 wks	4%	70%	26%
Fish	Over 24 wks	9%	62%	29%
Eggs	Over 24 wks	10%	64%	26%
Yoghurt	Over 24 wks	22%	50%	28%
Honey	Over 52 wks	23%	35%	42%
Fruit	Over 17 wks	21%	56%	23%
Vegetables	Over 17 wks	20%	56%	24%
Nuts	Over 156 wks	38%	19%	43%

Centile/Weight Charts

GPs and dietitians were more likely to use centile charts than Practice Nurses (Figure 8). A total of nine different charts were used by respondents, the most commonly used were the UK's Child Growth Foundation, the WHO growth charts, Castlemead publications, the HSE Baby book and the ICGP handbook.

Figure 8. Pecentage of Health Professionals who use centile charts



Commercial baby foods

Health professionals were also asked about their opinions of commercial baby foods. The majority of respondents agreed that they were particularly convenient for emergency situations or to use in moderation but family foods were preferred as they were less expensive and more nutritious (Table 6).

Table 9. What do you say to parents about commercial baby foods?

	Convenient	Expensive	Nutritious	Use family foods	Ok to use in moderation
GPs	29%	44%	4%	38%	53%
Dietitians	35%	48%	5%	54%	59%
Practice Nurses	26%	53%	7%	46%	60%

Current Recommendations and Guidelines

Health professionals were also asked to agree or disagree on a list of current recommendations and statements regarding maternal and infant nutrition. These findings are summarized in table 10. Overall, the majority of health professionals were aware that a folic acid supplement is advised for 12 weeks before conception and during the first 12 weeks of pregnancy. In addition, health professionals were aware of the advantage of breastfeeding in relation to childhood obesity and cognitive function. Knowledge of formula feeding was not as strong with many GPs and Practice Nurses in particular not aware of the type of formula feed to recommend if a mother chooses not to breastfeed and the addition of iron to follow on formula. There was also some confusion over vitamin D supplementation. The Food Safety Authority of Ireland (2007) recommended that all babies irrespective of how they are fed should receive a minimum of 5ug of vitamin D every day from birth to 12 months of age. GPs and Practice Nurses were more likely to be unaware of this recommendation.

Table 10. Awareness of current guidelines and recommendations

		Agree	Disagree	Don't know
A folic acid supplement (400µg) is advised for 12 wks before conception and during the first 12 weeks of pregnancy	GPs	97%	3%	<1%
	Dietitians	94%	2%	4%
	Practice Nurses	98%	1%	1%
For healthy children under one year, vitamin D supplement is not recommended	GPs	43%	28%	29%
	Dietitians	10%	80%	10%
	Practice Nurses	39%	28%	33%
Children who are not breastfed have a higher incidence and severity of obesity	GPs	77%	12%	11%
	Dietitians	75%	71%	14%
	Practice Nurses	56%	30%	14%
Whey based formula is the first choice formula for an infant	GPs	29%	20%	51%
	Dietitians	74%	8%	18%
	Practice Nurses	44%	20%	36%
Breastfed infants show better outcomes in cognitive	GPs	64%	10%	26%

development	Dietitians	74%	6%	20%
	Practice Nurses	57%	18%	25%
Follow-on formula contains more iron than regular infant formula	GPs	50%	9%	41%
	Dietitians	87%	2%	11%
	Practice Nurses	71%	7%	22%

Discussion

The results obtained from this research show that Healthcare Professionals want and require further training regarding maternal nutrition, feeding practices and the introduction of complementary foods. While the majority of Healthcare Professionals appear to be providing evidence based advice, the findings would indicate that there are some variations in the advice given and different levels of knowledge. This is of particular concern, considering the high confidence levels of practitioners to give advice on maternal and infant nutrition. However, due to the low response rate these results should be interpreted with caution. Comparable response rates have been observed in similar studies[11,12] and it may be possible that Health Professionals with a low interest in maternal or infant nutrition or training in this area were less likely to respond to the questionnaire.

General Practitioners, Dietitians and Practice Nurses are in a position to provide expectant mothers and parents with information regarding maternal and infant nutrition. Within Ireland, all expectant mothers are eligible for services under the Maternity and Infant Care Scheme, which is available free of charge. This scheme includes 9 visits to a General Practitioner of which two are postnatal, one at 2 weeks and a further visit at 6 weeks. There are various options available around antenatal care, childbirth and postnatal support. On discharge from hospital, mothers' are referred from the maternity hospital to the Public Health Nurse (PHN). A previous survey conducted at University College Dublin assessed the training needs, attitudes and knowledge of Public Health Nurses who provide foetal and maternal nutrition advice. However, at each of these stages, GPs, Dietitians and Practice Nurses are in a position to provide nutrition information and advice to mothers and parents.

It was interesting to note that many Health Professionals indicated that their own personal experience influenced their advice practices. It is important that Health Professionals have an understanding of the factors that influence maternal dietary and infant feeding practices together with knowledge of the academic literature. This is significant in planning strategies for health promotion interventions[13].

The most common sources of maternal and infant feeding nutrition knowledge was personal experience for GPs, whereas the main source for Dietitians and Practice Nurses was professional experience. Undergraduate and postgraduate studies contributed highly to GPs

and Dietitians knowledge although this accounted for a much lower source of Practice Nurses knowledge. During the previous two years, Health Professionals obtained information on this subject from a variety of sources and professional journals followed by HSE leaflets were the most common sources of information for GPs and Practice Nurses whereas Dietitians cited discussions with colleagues as the most common source of their nutrition knowledge during pregnancy and feeding practices in the past two years. However, although confidence levels in giving maternal and infant nutrition advice were high, many Health Professionals felt that they needed updating or further training in this area. In addition, while the majority of Health Professionals provides evidence-based advice regarding maternal and infant nutrition and confident about providing this support, this study highlighted some variation in the advice given that was not always consistent with the current guidelines and recommendations.

Maternal and infant nutrition advice needs to be evidence based and consistent to reduce confusion in order to increase parent confidence and therefore improve infant and child nutrition. Health Professionals were very aware of the guidelines regarding folic acd supplementation for expectant mothers and during the first 12 weeks of pregnancy. In addition, Health Professionals were aware of the advantage of breastfeeding in relation to childhood obesity and cognitive function[5,14]. The supporting evidence for the benefits of breastfeeding is well documented[4] and the Department of Health and Children and the HSE support the recommendations of the WHO which advise that all infants be exclusively breastfed for the first six months of life[4]. The majority of Health Professionals in this survey advised the introduction of complementary feeding for breastfed infants from 26 weeks (six months). However, a small percentage of those surveyed advised the introduction of complementary foods at an earlier stage with some advising from 10 weeks of age for both breast fed and formula fed infants.

The Department of Health and Children advises that for those infants who are formula fed, *'*suitable infant formula milk should be offered as their main drink during the first year of life, in addition to complementary solid foods after 4-6 months of age'. Therefore although breastfeeding mothers in Ireland are encouraged to delay the introduction of any food or drink, other than breast milk until their babies are 6-months old, guidelines for formula fed infants are more flexible specifying that complementary foods can be introduced between 4-6 months. However, there is also literature available from the HSE for GPs and Pharmacists which advises that if an infant is formula fed, complementary feeding should also not commence until 6 months of age[10]. This range of advice may account for the wide variation in recommendations by Health

Professionals who with the exception of Practice Nurses were more likely to recommend 26 weeks a as the recommended age to introduce complementary foods in formula fed infants.

There has been much international debate regarding the optimal age for introducing complementary foods. The WHO recommends starting at six months of age[4] and this advice has been adapted by several organisations, but many others recommend an age range. The American Academy of Pediatrics, Committee on Nutrition[15], supports the introduction of complementary foods between 4 and 6 months of age and a medical position paper published by the ESPGHAN committee on nutrition recommends that complementary feeding should not be introduced before 17 weeks and not later than 26 weeks[5].

In addition, the WHO[4] describes complementary feeding as 'the period during which other foods or liquids are provided along with breast milk''. The WHO decision to include human milk substitutes, infant formula and follow-on milk as 'complementary foods' is intended to emphasize and encourage breast feeding. Many organisations in different countries have adapted the WHO recommendations but define complementary feeding to include all solid and liquid foods other than human milk or infant formula. For example, the ESPGHAN committee on nutrition[5], in 2008, use the term complementary feeding to mean all 'solid and liquid foods other than breast milk or infant formula and follow-on formula'.

There is also some disagreement regarding the types and timing of first foods to be introduced. However, it is acknowledged that too early or late introduction of complementary foods can cause problems as before 4 months of age the infant digestive system and motor skills are not mature enough to deal with foods other than human milk or other liquids. Starting later than 6 months is also not appropriate since this may lead to developmental and nutritional problems. Dietitians were most likely to consider that there are health risks associated with both early and late introduction of complementary foods. GPs and Practice Nurses were less likely to identify risks associated with early and particularly with late introduction of complemntary foods. The most commonly identified risks associated with early weaning included allergy, obesity, immature digestive system, Coeliac disease, and risk of choking. Anaemia and nutrition deficiencies were most often cited as risks associating with late weaning. Other concerns included developmental issues such as speech development and resistance to new foods and tastes. However, the majority of Health Professionals recognised that fruit and vegetables,

followed by gluten free cereals were the most suitable first foods. Again, there is considerable variation in the expert recommendations when it comes to the types of foods to introduce to the young infant and in particular the timing of foods with increased antigenic properties. This is mainly due to a lack of scientific evidence. A report by ESPGHAN[5] recommends that complementary foods should not be introduced before 17 weeks and that foods should be added one at a time to allow detection of reactions to individual components. They also highlight that certain foods such as cow's milk, honey, nuts should be intrdouced at a later stage. The AAP[15] provides more detailed guidelines and recommends no solid food should be given before 6 months of age, and that the introduction of more allergenic foods should be delayed. In this survey, respondents were asked to indicate the recommended age for the introduction of a variety of complementary foods. This question was left blank by a large numbers of respondents with many health professionals commenting that they did not know the answers to these questions. There was good understanding of avoiding wheat before 24 weeks and cow's milk before 52 weeks but there was some uncertainty about particular foods. This is understandable as there are not always clear guidelines about the introduction of specific foods. In general however there was greater confusion over the introduction of foods such as nuts, yoghurt and honey.

The WHO acknowledges that if parents decide not to breast feed, they will be supported by Health Professionals[4]. In a study conducted by Tarrant[16] which investigated the current feeding practices in Ireland during the first six months of life, it was found that many mothers feel they do not receive enough information about formula feeding practices. This was also highlighted in this survey, with many Health Professionals acknowledging that the area they most needed updating or further training on was infant formula feeding practices. Knowledge of formula feeding was not as strong with many GPs and Practice Nurses in particular and many were not aware of the type of formula feed to recommend when mothers choose not the breastfeed and the addition of iron to follow on formula.

This study also highlighted that there was also some uncertainty over vitamin D supplementation. The Food Safety Authority of Ireland[17] recommends that all babies irrespective of how they are fed should receive a minimum of 5ug of vitamin D every day from birth to 12 months of age due to our reduced sunlight and re-emergence of rickets. In response the Fact sheet 13 from the Health Service Executive was made available on breastfeeding

directed as “Information for GP’s and Pharmacists”, entitled ‘Vitamin D’ in 2008. GPs and Practice Nurses were more likely to be unaware of this recommendation.

Within the UK, the Department of Health recommend that a breastfeeding mother should give vitamin D from 6 months if the baby is breastfed. But a formula fed baby is only advised supplementation if s/he is drinking less than 500 ml a day[18]. This knowledge was assessed in the UK which investigated if the advice that Health Visitors give to mothers on vitamin supplementation was in accordance with government recommendations. The findings showed that the majority Health Visitors were advising in accordance with government recommendations, a large percentage of Health Visitors correctly identified children who were at risk of developing rickets[19].

It is concerning for parents that there is not a similar policy for both Ireland and the UK as both countries are at the same latitude and have similar ethnic groups which may impact on vitamin D status. It is important that Health Professionals are aware of the most current recommendations.

GPs and Dietitans were more likely to use centile charts than Practice Nurses (35%) to monitor growth and weight. Howver, a total of nine different charts were used by respondents. Standardised charts are needed as well as training in using the charts.

A small number of research studies have been carried out by researchers at UCD investigatingthe knowledge and attitudes of Public Health Nurses. One such study investigated the knowledge, attitudes and practices of Public Health Nurses (PHNs) relating to breastfeeding and formula feeding in the first six months of life[20]. Seventy six percent of the nurses identified that they required training /updating on infant feeding guidelines. However, most of the PHNs displayed positive attitudes to breastfeeding although they were unsure of the health benefits of breastfeeding. Thirty percent of PHNs were not aware that breast fed babies show better outcomes in cognitive development, while 56% did not agree that breastfed babies show better outcomes in growth and that children who are not breastfed have a high incidence of and severity of obesity in later life (34%). Seventy eight percent of PHNs correctly disagreed with the statement ‘For healthy children under one year vitamin D supplement is not recommended’. Another study investigated the knowledge, attitudes and advice practices of Health Professionals including Public Health Nurses about weaning[21]. The results indicated varying levels of knowledge and a variety of advice practices similar to the current study.

Scientific evidence is increasing to support the emerging strong relationship between foetal nutrition, maternal nutrition and infant feeding practices and health outcomes. However while the evidence base for the health benefits of breastfeeding is very strong, further research is required into the areas of maternal and infant feeding practices, particularly complementary feeding. Although guidelines and recommendations are available these are not always consistent and this is reflected in the knowledge and attitudes of the Health Care Professionals. Evidence would suggest that foetal and maternal nutrition will have a major impact on future adult health and the healthcare services. For this reason Healthcare Professionals must be trained appropriately in order to provide advice on healthy living to both expectant mothers and parents that is relevant, manageable and directed at individual circumstances. This study emphasizes the need for increased training opportunities for Healthcare Professionals.

Recommendations

- Further clinical and prospective studies investigating the health outcomes of maternal and infant nutrition in later life
- Commencement of national Infant Feeding Surveys
- Appraisal of nutrition training at undergraduate and postgraduate levels
- A full review of national infant feeding policy by the Department of Health and Children and the Food Safety Authority of Ireland
- Standardisation of weight monitoring and centile charts
- Development of a web-based resource for Health Professionals

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