

The Healthy Start Scheme: An Evidence Review



HEALTH AND SOCIAL CARE

THE HEALTHY START SCHEME

AN EVIDENCE REVIEW

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EXECUTIVE SUMMARY

Background

This study was conducted in response to the Scottish Government's commitment to improve the Welfare Foods policy to better meet Scotland's dietary and nutrition needs and to reduce - still significant - health inequalities (Scottish Government, 2010b; 2011b). It takes a form of evidence review that attempts to establish whether the Healthy Start Scheme and the Nursery Milk Scheme, which are the key Welfare Foods policy in Scotland and the UK, work effectively and meet their strategic aims. Central to the schemes is the thoroughly documented belief that certain vulnerable groups require more state support than others – as they are more exposed to risk factors contributing to poor health outcomes (Scottish Government, 2010b). This report focuses on the following vulnerable groups: teenage mothers, pregnant and breastfeeding women from disadvantaged backgrounds, as well as their infants and young children (Lucas et al., 2015).

Healthy Start is a nationally implemented policy that provides low-income families at risk of nutritional insufficiency with coupons for free vitamins and vouchers for certain healthy foods (milk, fruit and vegetables, and infant formula milk) in order to improve their diet. It is designed as a form of an economic incentive combined with a 'nudge' effect - a policy intervention intending to influence day-to-day nutritional choices by providing a financial facilitator to opt for healthier choices (Griffith et al., 2015). The scheme also aims to provide health information through accessing health services early in pregnancy to promote breastfeeding and healthy diets (Griffith et al., 2015; Lucas et al., 2013; McFadden et al., 2015).

A significant number of medical and social literature databases were searched and relevant evidence was identified and evaluated. However, there is limited literature on the Healthy Start scheme, most of which has been produced in England, and therefore conclusions may not apply directly to the Scottish context.

Findings

The positive impact of Healthy Start on diet and nutrition is clearly recognised by both low-income families and health professionals, which provides sufficient evidence to argue that food vouchers are to some extent responsible for the increased intake of fruit and

vegetables for at least some of the scheme's beneficiaries. Moreover, for some low income families Healthy Start definitely works as nutritional safety net (Lucas et al., 2015; McFadden et al., 2015) and has even shown the potential to improve the nutrition and diets of mothers and young children in the longer term (Griffith et al., 2015; Khanom et al., 2015; Lucas et al., 2015; McFadden et al., 2015). However, it remains difficult to assess the impact of the scheme on other dietary choices since concerns have been raised that the vouchers may displace the amount of money reserved for healthy choices, making it available for the purchase of unhealthy food products (McFadden et al., 2013).

Food vouchers were also recognised providing an important financial safety net by helping with the costs of food products and to may to some extent improve low-income households' food security (Lucas et al., 2013). However, the Healthy Start scheme itself, even when combined with a range of other public health strategies, is argued to be "insufficient to outweigh the negative effects of poverty on nutrition" (Attree, 2006:75). More generally, current responses to health inequalities are argued to remain too narrow as they mostly adopt an "individualistic model as a basis for public health policies relating to diet and nutrition" (Attree, 2006:75). However, implementation of the 'Setting the table' guidance (NHS Scotland, 2015) could become an important step in recognising structural inequalities affecting dietary choices of low-income populations (Scottish Government, 2015b).

The impact of the Healthy Start scheme on access to healthy foods and improving diets has been undermined by the rising prices of food and costs of living in relation to the voucher value which has not increased since 2009 (Lucas et al., 2015). Moreover, narrow restrictions on eligibility criteria such as a low income threshold and the exclusion of severely vulnerable populations including asylum seekers serve to limit the scheme's potential to reduce health inequalities. Additionally, proposals to include the food vouchers under Universal Credit may threaten low-income families to secure the money for healthy (or sometimes any) food against other household expenses (Lucas et al., 2015).

A very low uptake of Healthy Start Vitamins serves to limit the impact of the scheme on improving the nutrition of low-income women and young children and reducing birth defects and future negative health outcomes. Logistical problems with the distribution of vitamins were mentioned as one of the major reasons behind the low uptake. Furthermore, providing free vitamins only from the tenth week of gestation does not provide adequate folic acid supplementation, since folic acid should be used preconceptually and up to the

twelfth week of pregnancy to protect against neural tube defects. Consequently, the current policy may be contributing to the increase in health inequalities. In response to the low rates of vitamin-supplementation amongst pregnant/breastfeeding women and young children, health professionals strongly advocate a change from a targeted provision of Healthy Start Vitamins to a universal approach, seeing it as more cost-effective than the existing 'overly bureaucratic and expensive administration' (McFadden et al., 2015; Scottish Government, 2015b).

Finally, some tensions between the scheme's objectives have also emerged. In particular, the inclusion of infant formula is perceived by some health professionals as conflicting with the promotion of breastfeeding and – in a broader sense – of healthy choices and good health outcomes in the future (McFadden et al., 2015). Some suggested that including formula milk into the scheme incentivises women to formula feed or discourages them from breastfeeding; while others argued that low income families should have access to resources to feed their children and pointed out that the vouchers value should cover the whole costs of the formula (McFadden et al., 2014).

Conclusion

While there is an overall consensus that the Healthy Start scheme works as a nutritional and financial safety net for some low income families, it is also argued that Healthy Start and other other public health policies and initiatives in the UK, still “fail to take into account the full impact of structural influences on food choices, or recognize the social and emotional factors that influence diet and nutrition” (Attree, 2006:67). However, this evidence review supports the claim that initiatives such as the Healthy Start Scheme are useful and needed as they provide low-income families with some level of nutrition and food security (Lucas et al., 2015). In order to work more effectively and to meet their strategic aims and its users' needs, a number of barriers to awareness of, availability of, and access to the scheme should be addressed and overcome.

1. INTRODUCTION

Background and significance of the Welfare Food policies

1.1. The Scottish Government's commitment to improving health outcomes and reducing health inequalities is implemented through a variety of policies, guidelines, recommendations and campaigns which have been launched in Scotland and across the UK for the promotion of healthy lifestyles, balanced and sustainable diets, food standards and adequate nutrition (DH, 1991; NHS Scotland, 2015; PHE, 2014a; Scottish Government, 2010a; 2010b; 2011c). Consistently with this approach, a special preventative emphasis has been placed on women planning pregnancy, pregnant and breastfeeding women as well as infants and young children (Scottish Government, 2010b; 2011a, 2011b). This approach seeks to establish healthy diets and good nutrition early, as it recognizes how crucial they are for growth, development and health outcomes (both, immediate and long-term). One of the major difficulties faced when improving health outcomes is the extent of health inequalities: not only do significant differences exist in dietary patterns, nutritional intake and health outcomes between lower and higher socioeconomic groups (Nelson et al., 2007); but there is a clear effect of poorer nutrition and socio-economic disadvantage on health outcomes (Scottish Government, 2010b). The purpose of initiatives such as the Healthy Start Scheme is to target disadvantaged groups in order to support families from all backgrounds to give their children the best possible start.

1.2. The Welfare Foods policy is a national initiative comprised of: the Nursery Milk Scheme (NMS), Healthy Start Food Vouchers (HS Foods) and Healthy Start Vitamins (HS Vitamins). The Healthy Start Scheme (HS Scheme), consisting of the HS Foods and HS Vitamins, focuses on low-income pregnant and breastfeeding women and their children under 4 years of age at risk of nutritional insufficiency (Lucas et al., 2015). It provides them with vouchers and coupons restricted to certain purchases, i.e. cow's milk, fresh or frozen fruit and vegetables or infant formula milk and vitamins (Griffith et al., 2015). As such, it combines both welfare and public health policy domains, which face the additional challenge of integration between these areas and efficient collaboration by colleagues across agencies (Matchell, 2015). Nevertheless, an important role the HS policy also plays in improving food security should not be overlooked either, especially in the light of claims that the UK food aid system, in comparison with countries such as the US and Canada, is relatively undeveloped (Lambie-Mumford et al., 2014). Evidence suggests that only free

nursery milk, free school meals and food vouchers contribute to reducing the negative impact of food (and nutrition) insecurity experienced by many low-income households across the UK (see Lambie-Mumford et al., 2014 for details).

Aims, scope and methods of the study

1.3. This study was conducted in response to the Scottish Government's commitment to improve the Welfare Foods Scheme to better meet Scotland's dietary and nutrition needs and to reduce - still significant - health inequalities (Scottish Government, 2010b; 2011b). It takes a form of evidence review that attempts to establish whether the Welfare Foods policy works effectively. In particular, this evidence review has three aims:

(i) to critically evaluate the effectiveness of the Healthy Start Scheme against its aims (discussed in detail in section 2.9), its impact on beneficiaries' diets and nutrition, dietary habits and health outcomes;

(ii) to engage in a wider discussion regarding healthy diets, dietary behaviours and nutrition pre – and during pregnancy and early years

and (iii) to contribute to the Scottish Government's action plan of how the Welfare Foods policy can be improved within the Scottish context over the next two years.

1.4. It needs to be highlighted, however, that it was decided amongst the supervisory team that the main focus should remain on the evaluation of the Healthy Start Scheme. Nevertheless, the review still attempts to situate the scheme within the broader context of the public health policy through e. g. addressing difficult questions about the competing evidence around specific intake recommendations for particular supplements (vitamin D and folic acid), the impact of inclusion of infant formula milk into the schemes or the benefits and challenges of providing free nursery milk.

1.5. The study was carried out over a 3 months period, ruling out the scope for a more systematic review. Literature contributing to this study was selected based on purposive and strategic sampling criteria. A range of academic databases across social and medical sciences and various key search-words were used in order to identify relevant literature on the HS scheme on the one hand and health, healthy diets and nutrition pre- and during pregnancy and early years on the other. Moreover, additional research and evidence shared by health, social care and welfare organizations involved in the monitoring, feedback and implementation of the Healthy Start Scheme at both national and local levels

was included in this report. As a consequence of such sampling decisions, this study incorporates the most recent and relevant literature, both published and unpublished, between 2010 and 2015 (with some important exceptions published before 2010) and presents a small scale evidence-review.

1.6. The evidence used in this review comes from a broad range of literature sources, including academic publications, recommendations and guidelines from different health advisory bodies, the Scottish Government's and other stakeholders' reports and initiatives. Their findings were evaluated and relevant data was extracted and organised under key themes discussed in the following chapters: The Healthy Start – setting the scene (chapter 3); Nutrition, Diet and Dietary Patterns in Scotland (chapter 4), Evaluation of the Healthy Start Scheme (chapter 5) and Recommendations (chapter 6). The draft and a final report were then reviewed by a supervisory team before publication.

Caveats and limitations

1.7. While the study analyses the most up-to date recommendations and guidance on healthy diets and nutrition and addresses the evidentiary problems contained therein, it does not presume to evaluate the evidence of the scientific quality previously reviewed and collated by health professional agencies/advisory bodies, such as the National Institute for Care and Excellence (NICE), Scientific Advisory Committee on Nutrition (SACN), First Steps Nutrition Trust, and the British Medical Association (BMA). Rather, research results have been summarised and analysed in reference to the Healthy Start Scheme's aims and their possible impact on health outcomes of pregnant and breastfeeding women and young children and potential improvements to the scheme.

1.8. Furthermore, this review narrows its scope to certain aspects of public health policy: healthy diets, nutrition and dietary patterns of women pre- and during pregnancy and breastfeeding and of young children under 5. The review acknowledges a wide range of (interconnected) strategies and initiatives aimed at improving health outcomes for this demographic, such as the promotion of breastfeeding, the importance of physical activity, early prevention of maternal and childhood obesity, antenatal care etc. As these are extensively covered elsewhere (Scottish Government, 2010a; 2011a; 2011b) they have been excluded from this analysis.

1.9. Moreover, it is important to note that the Healthy Start is a relatively new scheme and is only just starting to produce data and results for monitoring and evaluation purposes.

The existing literature is therefore somewhat scarce (McFadden et al., 2013). Furthermore, much of the existing research was conducted solely in England (e.g. Attree, 2006; Jessiman et al., 2013; Lucas et al., 2013 & 2015; McFadden et al., 2013; 2014 & 2015). Whilst these results can undoubtedly provide a useful framework for the evaluation of the Healthy Start scheme for the Scottish Government, one should be cautious of their transferability into the Scottish context. In order to counter this, we have also made use of responses to the Scottish Government consultation amongst a range of Healthy Start stakeholders across Scotland. At the time of writing this review, a report on the impact of the Welfare Food programme containing insights from health, social care and welfare professionals in the field of maternal and child health and nutrition has just been drafted and its preliminary findings have been included in this review (Scottish Government, 2015b). However, consultation with the Healthy Start scheme users in Scotland is yet to be sought. Similarly, a comprehensive evaluation project of the Healthy Start Scheme in Scotland based on secondary analysis of the data from Growing Up in Scotland Survey and Infant Feeding Survey, is currently being carried on and is due in 2017 (for details see: National Institute for Health Research website)¹.

1.10. With these caveats and limitations in mind, this report attempts to evaluate the effectiveness of the Healthy Start Scheme and the role of the Nursery Milk Scheme in diets of young children as well as offers some recommendations for improvements. The next chapter provides a contextual background for the key public health and Welfare Foods policies in Scotland.

¹ <http://www.nets.nihr.ac.uk/projects/phr/1316410> [accessed: 13.09.2015].

2. HEALTHY START – SETTING THE SCENE

2.1. This chapter identifies the key public health policies in Scotland, directed at general population and in particular at women planning pregnancy, pregnant and breastfeeding women and young children – of whom some are beneficiaries of the Healthy Start Scheme. It then positions the Welfare Foods policy (consisting of the Healthy Start Scheme and the Nursery Milk Scheme) within this broader public health agenda, identifies the main aims of the scheme and outlines the key areas for improvements.

Key public health policies

2.2. The promotion of a healthy, balanced and sustainable diet (NHS Health Scotland, 2015; PHE, 2014a) as well as overall good nutrition (DH, 1991) remains a key public health objective in Scotland and across the UK, alongside a range of other health strategies, such as: promoting healthy lifestyles, physical activity and healthy weight or obesity-prevention (Scottish Government, 2010a & 2011c). The main and primary aims of these combined, complex and often interwoven strategies are to achieve better health outcomes for all citizens on the one hand and to reduce and eradicate health inequalities between members of different social classes on the other (Attree, 2006; Scottish Government, 2010b).

2.3. Preconception and pregnancy, as well as infancy and early years have been long recognized to be especially important and critical periods of human development which have tremendous impact on health outcomes in later stages of life (BMA, 2009; SACN, 2011). In the light of well-established clinical literature, good nutrition and healthy diets are important for achieving good health outcomes amongst pregnant and breastfeeding women and for normal growth and healthy development of young children (Baskin et al., 2015; Westland and Crawley, 2012). In particular, an emerging body of evidence has linked maternal nutrition with infant cognitive development (Emmett et al., 2015; McInerny, 2014), maternal mental health (Baskin et al., 2015; Emmett et al., 2015), infant birthweight (Wen et al., 2013) as well as with risk of birth defects and negative health outcomes in mothers and their children (Kaiser & Campbell, 2014). For example, unhealthy dietary habits during pregnancy have been adversely associated with high infant birthweight (over 4 kilos) which consequently carries increased risks of obesity in childhood and adolescence (Wen et al., 2013).

2.4. Furthermore, there is a wide range of clinical evidence establishing the connection between poor early nutrition and an increased risk of chronic disease in later periods of life (BMA, 2009; SACN, 2011). While evidence comes from numerous sources (such as observational studies in humans and experimental in humans and animals), it varies in quality and remains inconclusive (e.g. due to other risk factors affecting humans health and occurring at different stages of life - genetic, environmental and behavioural; SACN, 2011). Despite there still being many unanswered questions about the precise interactions between genetic, environmental and behavioural impacts, SACN (2011:115) concluded that the evidence collected is sufficient “for concern about the later health consequences of compromised or excessive nutrient supply during early growth and development”. What is more, the evidence from the emerging field of epigenetics links maternal (and also paternal) diet and nutrition with a child’s “epigenetic programming of health and the response to diet itself” (Haggarty, 2013:364). Such nutrition programming “suggests that an under- or oversupply of a particular nutrient or nutrients at a critical or sensitive period of development may have long-term effects on the structure or function of specific organs or systems in the offspring” (Emmet et al., 2015:154). For more information on epigenetic nutrition programming consult Cambridge Journals website².

2.5. Therefore, a variety of recommendations and strategies (concerning nutrition, food standards, healthy and sustainable diets) directed at all women planning pregnancy, pregnant and breastfeeding women as well as at young children have been widely implemented, both in Scotland and across the UK (e.g. DH, 2010; NICE, 2008b; Scottish Government, 2011b; NHS Health Scotland, 2015). However, as significant differences exist in dietary patterns and nutritional intake between lower and higher socioeconomic groups, similarly as negative health outcomes remain unequally distributed (Nelson et al., 2007; Scottish Government, 2010b), some of the Government’s initiatives, the Healthy Start Scheme in particular, are directed specifically at disadvantaged populations.

Welfare Foods policies

2.6. The Welfare Foods policy is a national initiative comprised of: the Nursery Milk Scheme (NMS), Healthy Start Food Vouchers (HS Foods) and Healthy Start Vitamins (HS Vitamins). The Nursery Milk Scheme and the Healthy Start Vouchers and Vitamins have been enacted under the power in section 13 of the Social Security Act (1988) and they are

² <https://www.york.ac.uk/media/economics/documents/hedg/workingpapers/1510.pdf> [accessed 22.09.2015].

both governed by legislation (Healthy Start Scheme and Welfare Food (Amendment) Regulations 2005; Welfare Food Regulations 1996). The Healthy Start and NMS operate as a single Welfare Food Scheme across the whole UK and is a matter reserved to the UK Government. It is currently under debate whether this provision will remain reserved or will be devolved as part of the on-going process resulting from the Smith Commission.

2.7. The local delivery of the scheme is currently run by the Department of Health (DH) for England, but funding from Scottish Government budgets is provided for Scottish applicants. Moreover, Scottish Health Boards are responsible for distribution of the Healthy Start Vitamins to beneficiaries – directly or by sub-contracting vitamins provision to other suppliers (Healthy Start Scheme and Welfare Food (Amendment) Regulations 2005). For example, Scotland (unlike other UK state members) made the Healthy Start Vitamins available through the community pharmacies' route between April 2013 and May 2015 (Scottish Government, 2015a). Furthermore, Scottish Ministers hold the powers to alter the prescription of foods and vitamins under the Healthy Start Regulations, and may have more decision-making powers over the scheme's scope, administration and implementation when the Scotland Bill 2015-16, devolving new powers to the Scottish Parliament and the Scottish Government, is enacted. How the Healthy Start Scheme may be affected by the most recent welfare policy changes in the UK also remains unclear (Matchell, 2015). Despite all the uncertainty encompassing the future of the scheme, at the time of writing this report development of Welfare Food policies in Scotland continues under the current legislative framework.

2.8. The Healthy Start Scheme targets low-income pregnant and breastfeeding women and children under 4 years of age at risk of nutritional insufficiency (Lucas et al., 2015) and provides them with coupons for free vitamins and vouchers for certain healthy foods (milk, fruit and vegetables, and infant formula milk). Most of the beneficiaries are means tested except for pregnant women under the age of 18. For more information on the Healthy Start Scheme, eligibility criteria, application process, foods and vitamin supplements prescribed by the scheme etc. consult the Healthy Start website³.

2.9. The Healthy Start Scheme undoubtedly combines elements of public health and welfare areas of the state's interests and interventions (Machell, 2015), as it provides a financial facilitator to opt for healthier dietary choices and enables access to free vitamin

³ <http://www.healthystart.nhs.uk/> [accessed 28.08.2015].

supplements. As such, the literature suggests that the scheme was implemented in order to meet certain aims, in particular:

1. To provide a nutritional and financial safety net for low-income families and to improve access to healthy and nutrition-rich foods and vitamin supplements through the use of vouchers and coupons;
2. To influence the dietary choices of pregnant and breastfeeding women and young children (“nudge” effect) with ring-fenced food vouchers;
3. To improve nutrition, diets and the health outcomes of pregnant and breastfeeding women and young children (no data on the latter);
4. To tackle vitamin-deficiency preconceptually, during pregnancy, breastfeeding and early years (HS Vitamins);
5. To promote breastfeeding, healthy diets and health information through accessing health services early in pregnancy (Griffith et al., 2015; Lucas et al., 2013; McFadden et al., 2015).

2.10. Moreover, it could be argued that, in view of its strategic aims, the Healthy Start Scheme could also be positioned within the broader public health agenda that attempts to reduce health inequalities across the UK. Similarly, the role it plays in improving low-income families’ food security should also be highlighted, especially in light of claims that the UK food aid-system remains under-developed, while “more and more households are facing food poverty, or what is more often understood as food insecurity” in the UK (Dowler & Lambie-Mumford, 2015:417). As such, this report suggests that the role of the Healthy Start scheme may be and perhaps should be understood in various ways. For example, Lucas and colleagues (2015) have reported that their study’s participants – the beneficiaries of the scheme – perceived it as a form of welfare support or as a health strategy that aims to encourage healthy diets, or as both.

2.11. The NMS is another Welfare Foods initiative, yet its design differs from the Healthy Start rather significantly. Unlike the Healthy Start that is a means tested strategy, the NMS entitles all children under five (regardless of their background), who spend more than two hours a day in childcare, to receive a free daily portion of milk (1/3 pint or 189 ml). However, it remains under childcare providers’ control whether to enter the scheme and

claim the reimbursement for milk they provide. Currently, the uptake of the NMS stands at approximately 50% (for details see: The NMS website⁴).

Need for action, need for improvements

2.12. The Scottish Government is currently reviewing how the Welfare Food Schemes could be improved to better meet Scotland's needs. The overall uptake of the Healthy Start Scheme in Scotland is relatively high (approximately 74% of women eligible use the scheme; however the uptake rates vary significantly when broken down regionally, with uptake rates as low as 45% in some areas and as high as 90% in others), suggesting a need for increasing eligible users' awareness of the scheme in certain geographical areas. Voucher redemption stands at 88% in Scotland in comparison to 90% in England (MacKenzie, the Healthy Start Leads meeting, September 8, 2015; Scottish Government, 2015a).

2.13. The evaluation of the scheme conducted in England showed that Healthy Start is an important source of support for low income families, and is recognized as such by health and social care practitioners (McFadden et al., 2013). That being said, a significant number of barriers and shortcomings have also been reported. For example, despite the wide range of evidence emphasising the importance of vitamins intake amongst pregnant and breastfeeding women as well their children as crucial for their health and development, the uptake of the HS vitamins has been very low amongst eligible women in the UK (overall - below 10%; Jessiman et al., 2013; while some report an uptake as low as below 3%; Moonan et al. 2012). Introduction of the Scottish national trial scheme involving community pharmacies in distribution of vitamins (between April 2013 and May 2015) has not improved the uptake rates even though the role of pharmacies as a distribution route has increased (Scottish Government, 2015a). Therefore, the Scottish Government still has more work to do to increase the awareness, accessibility and consequently the uptake of the Healthy Start Scheme, in particular of the vitamin supplements, in Scotland. While the focus is mostly on the improvements under the current system, also other possible actions (if the Welfare Foods policy is to be a devolved power) will be explored under this review in the recommendations section (chapter 6). However, before engaging with evaluation of the Healthy Start Scheme itself and offering some recommendations for improvements, this report will first discuss the evidence on the role of nutrition, diet and eating habits in

⁴ <https://www.nurserymilk.co.uk/> [accessed 29.08.2015].

achieving good health outcomes amongst pregnant and breastfeeding women and for normal growth and healthy development of young children.

3. NUTRITION AND DIETARY PATTERNS IN SCOTLAND

3.1. This chapter outlines the important role of diet and nutrition during preconception, pregnancy and early years as they have been long recognized as important and critical periods of human development with tremendous impact on health outcomes in later stages of life (BMA, 2009; SACN, 2011). In particular, it discusses the current state of medical knowledge on vitamin supplementation within these periods of human life. Then, it reviews the current strategies and policies in place that aim to improve health outcomes and reduce health inequalities amongst this population and attempts to establish whether they meet their goals. Finally, this chapter engages in a discussion about the factors contributing to shaping dietary profiles and it offers some recommendations for actions that can be undertaken alongside the Welfare Foods initiative.

3.2. As emphasized in the previous chapter (sections 3.3-3.5), good nutrition is crucial for human health. Micronutrients, of which 30 are necessary and provided through dietary sources, not only contribute to regulation of various bodily functions but also play a key role in preventing diseases (Shergill-Bonner, 2013). Dietary Reference Values (DRVs) were published by the Department of Health in 1991 and they provide recommendations on most nutrients and energy intakes. For obvious reasons, women planning their pregnancies, pregnant and breastfeeding women as well as young children have been identified as having additional nutritional requirements. For more understanding of the Scottish Policy Framework on how to provide these maternal and infant guidances and services, please consult 'Improving Maternal and Infant Nutrition: A Framework for Action' (Scottish Government, 2011a).

3.3. This framework focuses on supporting maternal and children's health and nutrition, while recognizing the extent and impact of health inequalities on health outcomes and risks of inadequate nutrition resulting from "complex social, environmental and economic circumstances" (Scottish Government, 2011a:5). Therefore, improving nutrition intake especially amongst low-income mothers and children remains a priority for the Scottish Government - as advised by NICE (2008a) in 'Improving the nutrition of pregnant and breastfeeding mothers and children in low-income households' and supported by a range of policy initiatives, strategies and guidance, some of which will be discussed in more detail further below (section 3.22).

3.4. However, while these nutrition and dietary recommendations are directed at all mothers and young children, those from disadvantaged backgrounds are more likely to be at risk of micronutrients deficiency and therefore are defined as the focus for affirmative and preventative action. A significant body of medical literature also suggests that in case of certain nutrients (e.g. vitamin D and folates) even having healthy, nutrition-rich and sustainable diets does not ensure that their adequate levels will be met. Therefore, women planning pregnancy, pregnant and breastfeeding women and young children (under 5) are recommended to take certain vitamin supplements in order to reduce the risks of birth defects and poor health outcomes in later life (Bestwick et al., 2014).

3.5. Even with a range of policies in place, there has been a growing concern about prevalence of vitamin D deficiency related diseases amongst children (Ahmed et al., 2011). Similarly, levels of folic acid supplementation before and during pregnancy have been alarmingly low and further decreasing in the UK (Bestwick et al., 2014). This leads to an important question about whether the current policies around vitamin-supplementation have been failing or even contributed to the increase in health inequalities (as Bestwick and colleagues, 2014, imply) as well as what can be done in order to reverse these effects.

VITAMINS SUPPLEMENTATION IN PREGNANCY AND EARLY YEARS

Folic acid

3.6. Recommendations regarding folic acid supplementation before and up to 12 weeks of pregnancy (Lemer, 2013) have been adopted in the UK and globally since the mid - 1990s after a growing body of medical evidence has found links with the reduction of the risk of birth neural tube defects (NTDs; Al-Gailani, 2014). To date, folic acid supplementation has been especially recommended in the countries which do not fortify foods with folic acid (such as the UK; Al-Gailani, 2014). Therefore, in accordance with highly consistent body of medical evidence, it is crucial that all women planning pregnancy and all pregnant women are provided with the information about the benefits of folic acid supplementation and about the Healthy Start vitamin supplements by health professionals (NICE, 2008b).

3.7. On the other hand, the question of mandatory fortification of certain foods (e.g. flour and other grain products) with folic acid continues to be under on-going debate (Al-Gailani,

2014). Currently, mandatory fortification of flour with folic acid in the UK is recommended by SACN (2009). In particular, it is emphasized that it would improve the folate status of women who are at risk of pregnancies affected by NTDs. In the light of the findings that 1 in 6 of pregnancies are unplanned and 1 in 4 or even 1 in 3 are ambivalent (Wellings et al., 2013), fortification has been seen as a preferable alternative to supplementation given that the effect of the prevention of birth defects only occurs if provided before and in the first 12 weeks of pregnancy. Moreover, a qualitative study by Barbour and colleagues (2012) conducted in Scotland shows that one of the main causes for pregnant women not taking the recommended dosage of folic acid is due to unplanned pregnancies, followed by: being too busy to take folic acid every day, experiencing nausea or making decisions based on their closest networks' experiences. In particular, it should be especially stressed that participants often made statements about the influence of family and friends suggesting that societal factors can and do have impact on women's choice on using vitamin supplements during pregnancy (Barbour et al., 2012).

3.8. Similarly, the findings of the longitudinal study by Bestwick and colleagues (2014) seem to support the necessity of fortifying flour and other cereals or grains with folic acid in the UK. They reported low and decreasing level of preconception folic acid supplementation amongst women attending the Wolfson Institute of Preventive Medicine in London before pregnancy, from 35% in 1999-2001 to 31% in 2011-2012. Furthermore, a significant gap in folic acid uptake was found across different age and ethnic minorities groups. In particular, young women under 20 were least likely to use folic acid pre-pregnancy (5-6%) in comparison with women aged 35-39 (40% level of uptake). Non-caucasian women were also reported to be less likely to use folic acid supplementation than those of caucasian origin. These results highlight the importance of using a variety of methods to increase vitamin-intake, including campaigns promoting behavioural change within local/community contexts or directed at specific age and ethnic groups (McGee and Show, 2013; NICE, 2008b).

3.9. On the other hand, opponents argue that fortifying foods with folic acid may lead to exceeding its Dietary Reference Value (DRV) levels which can be especially risky for people whose diets are lacking in vitamin B12 (as it may cover the signs of anaemia). Some research has also linked excessive folic acid intakes (at doses higher than 1 mg/day) with an increased risk of the development of certain cancers (Hubner, Houlston, & Muir, 2007 cited in Al-Gailani, 2014). Nevertheless, following SACN (2009) guidance,

mandatory fortification of grain products could be an option worth considering if a range of safety measures are introduced alongside it, such as:

- Restrictions on voluntary folic acid fortification of certain foods (e.g. cereals);
- Adjusted guidance on supplement intake by various populations – including pregnant women;
- On-going monitoring of any new evidence on any negative impact of long term folic acid intake.

3.10. In case mandatory fortification of grain products with folic acid in the UK is implemented, women planning pregnancy as well as pregnant women up to the twelfth week would still be recommended to use folic acid supplements (SACN, 2009:8; for details see: the UK Government website⁵).

Vitamin D

3.11. In recent years, the importance of vitamin D supplementation has received an increased attention, not only in relation to health and wellbeing of at-risk groups as defined by the Department of Health (2012, which includes pregnant and breastfeeding women and children under 5; for details see the Department of Health website⁶), but also – to the whole UK and European population (NICE, 2015; Sinha et al., 2013).

3.12. This report attempts to summarize the state of the current medical knowledge on the role played by vitamin D in the health of pregnant and breastfeeding women and their children as it is a main component of the Healthy Start Vitamins (for both mothers and children). This preliminary review should be complemented by a more thorough one given that recent research has contested the evidence in support of vitamin D supplement-intake during pregnancy. For example, Lawlor and colleagues (2013) recently reported no relevant association between levels of vitamin D during pregnancy and bone – mineral content (BMC) in late childhood, seriously undermining previous evidence widely cited across medical literature and used to support claims of importance of vitamin D supplementation during pregnancy and early years.

⁵https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/339293/SACN_Report_to_CMO_on_folic_acid_and_colorectal_cancer_risk_.pdf [accessed: 11.10.2015].

⁶ <https://www.gov.uk/government/publications/vitamin-d-advice-on-supplements-for-at-risk-groups> [accessed: 15.10.2015].

3.13. The following section is an attempt to contextualize such research within the Healthy Start framework in order to determine the best possible way of supporting low-income pregnant women and young children. In particular, the widely debated issue of the universal provision of free vitamins to all pregnant and breastfeeding women and young children against the targeted provision (as set up by the Healthy Start) will be investigated and critically assessed in the Recommendations section (chapter 6).

3.14. In the light of well-established clinical literature, vitamin D is argued to be important for healthy bone development (e.g. Blann, 2014; Lewis, 2014; Michie & Sanchez, 2011). However, the role vitamin D plays during pregnancy and in the formation of the foetal skeleton remains contested (SACN, 2015). Major deficiency in vitamin D has been associated with serious bone diseases such as rickets in childhood, osteomalacia in youth and adulthood and falls in adults over the age of 50 (Pai and Shaw, 2011; SACN, 2015; Sinha et al., 2013) even though the evidence has been mainly observational (SACN, 2015). The most recent Scientific Advisory Committee on Nutrition (SACN, 2015) draft report evaluated up-to-date research on vitamin D in human health, concluding that evidence regarding positive impact of vitamin D on musculoskeletal health has been sufficiently established and that the links between vitamin D deficiency and bone diseases justified enough to inform policy making.

3.15. It is worth noting that the emerging body of evidence has also linked vitamin D with positive non-musculoskeletal health outcomes, sometimes very prominent. For example, vitamin D supplementation during infancy and early years was reported to positively “affect long-term programming of the immune response pattern” of the human body (Hyppönen et al., 2007:1136), to reduce low birth weight (Blann, 2014), incidence of diabetes or pre-eclampsia (Hyppönen et al., 2001 & 2007). However, SACN (2015) regarded such evidence to be insufficient and inconclusive.

3.16. Pregnant and breastfeeding women, infants and children under 5 years old are therefore advised to take vitamin D supplements (Decsi & Lohner, 2014; DH, 2012; Leaf, 2007) and they have been classified as one of the at-risk groups of vitamin D insufficiency (DH, 2012; Wood and Cheetham, 2015), alongside those with darker skin (i.e. South Asian, African, Caribbean or Middle Eastern origin), those who are obese or those with limited exposure to sunlight (such as the Scottish population as a whole during the winter months). Such recommendations are based on the evidence of the impact of vitamin D on musculoskeletal health outcomes only (DH, 2012; SACN, 2015).

3.17. To date, policies and recommendations alongside information and support have not always been successful at reaching groups at risk of vitamin D insufficiency. Of major concern is the recent increase in rickets caused by vitamin D deficiency (as opposed to various forms of the inherited rickets), which is on the rise amongst large parts of populations in many developed countries (Decsi & Lohner, 2014; Pai and Shaw, 2011; Sinkha et al., 2013). For example, Ahmed and colleagues' (2011) research seems to confirm an increased occurrence of symptomatic vitamin D deficiency in the west part of Scotland (Glasgow area). These alarming findings have been highlighted as an indication of public health policies failing to effectively support at-risk groups in adequate vitamin D supplementation (Ahmed et al., 2011; Sinkha et al., 2013).

3.18. Moreover, the recent draft report by SACN (2015) which evaluates up-to-date evidence about the impact of vitamin D on people's health extends recommendations about vitamin D supplementation to the whole UK population (RNI – reference nutrient intake is set up at 10 µg/d or 10 micrograms per day for the whole year and is argued to work as a protective measure). SACN's (2015) findings suggest that the risk of vitamin D deficiency in the UK (and many other countries) is much more widespread than previously argued (Sinha et al., 2013). A variety of reasons which may have contributed to vitamin D insufficiency/deficiency in children, pregnant and breastfeeding women but also in adolescents and adults in the UK were identified. These include living in northern latitudes; changes in lifestyle, e.g. more time spent indoors, the blocking of ultra-violet rays responsible for triggering the production of vitamin D (e.g. by wearing sunscreen in order to protect oneself from sunburn or skin cancer), decrease in the use of supplements and on-going changes in diet (e.g. consuming less oily fish; Michie and Sanchez, 2011; Sinha et al., 2013).

3.19. Yet, how to improve the UK population vitamin D status (and in relation to pregnant and breastfeeding women and young children in particular) remains a key public health issue to resolve. Universal provision of the Healthy Start vitamins to all pregnant and breastfeeding women and young children, fortifying foods with vitamin D, national and local-level activities promoting the importance of vitamin D supplements serve as examples of actions that can be undertaken by Department of Health, local authorities and a range of public and third sector organizations (NICE, 2014; McFadden et al., 2013; Scottish Government, 2015b). The recommendations section (chapter 6) will further explore the actions that can be undertaken in order to achieve this objective, within and alongside the Healthy Start Scheme.

Vitamin supplementation in early years

3.20. “Infants have special nutritional requirements because of their rapid growth and development and vulnerability to infection. Optimal nutrition in infancy is essential for normal cognitive and physical development and may protect against obesity and chronic disease in adult life” (BMA, 2009:49). Alongside vitamin D (discussed above in relation to both, mothers and children) recommendations on vitamins A and C supplementation for young children under 5 have been sustained by the ‘*Setting the table*’ guidance (NHS Health Scotland, 2015). Diets rich in iron are also recommended due to evidence suggesting that iron deficiency (ID) when concomitant with a poor diet and often predominant in low socio-economic backgrounds (Decsi and Lohner, 2014) is “the most common micronutrient deficiency worldwide and young children are a special risk group because their rapid growth leads to high iron requirements” (Domellöf, et al., 2014: 119; Eussen et al., 2015; Paoletti et al., 2014).

HEALTH AND HEALTH INEQUALITIES IN SCOTLAND

Significant inequalities exist with those in the most deprived areas, the lowest income households or routine and semi-routine households found to have worse health outcomes, and higher exposures to risks for poor outcomes, than their more advantaged counterparts. (Scottish Government, 2010b:13)

Giving every child the best start in life is crucial to reducing health inequalities across the life course. The foundations for virtually every aspect of human development – physical, intellectual and emotional are laid in early childhood. What happens during these early years, starting in the womb, has lifelong effects on many aspects of health and well-being – from obesity, heart disease and mental health, to educational achievement and economic status. (Marmot et al., 2010:94)

3.21. The Scottish Government has long been expressing its dedication to improving health outcomes across Scotland. Healthy diets, good nutrition and healthy lifestyles are extensively promoted by the Scottish Government while special attention is paid to pregnant women and breastfeeding mothers or young children.

3.22. In particular, consumption of a wide variety of healthy foods (including fruit and vegetables, but also from the remaining four food groups as identified by the eatwell plate; PHE, 2014a) alongside taking vitamin and mineral supplements is recommended for this group (Kaiser & Campbell, 2014). Therefore, a variety of guidelines and initiatives has

been set up in order to promote healthy and sustainable diets, food standards, nutrition, in general and especially before and during pregnancy and breastfeeding and in early years.

In particular:

- Eat Better Feel Better is a national campaign that aims to promote and influence healthy changes in diets in Scotland (see: the Scottish Government Healthier Scotland website⁷).
- The eatwell plate (PHE, 2014a) is a guidance advising on the types and portions of foods that constitute healthy, nutrition rich and well-balanced diets (see: the UK Government website⁸).
- Dietary Reference Values for Food Energy and Nutrients for the United Kingdom (DH, 1991) provides current recommendations for daily requirements of foods and nutrients intake (Reference nutrient intake - RNI).
- Scottish Dietary Goals (SDGs, Scottish Government, 2013b) set up the policy goals that would contribute to improving health outcomes of the Scottish population through positively influencing dietary choices (for details see: the Scottish Government website⁹).
- Improving Maternal and Infant Nutrition: A Framework for Action (Scottish Government, 2011a) is a 10 year action plan directed at a range of organisations (e.g.: the NHS, local authorities, employers, the community and voluntary sector) in order to improve nutrition in preconception, during pregnancy and in children up to the age of 5 (especially amongst low income families) and promote breastfeeding as the best form of nutrition and immunisation for infants as well as a good form of breast cancer protection for mothers (McAndrew et al., 2012).
- The Breastfeeding etc. (Scotland) Act 2005 is a piece of legislation that makes it an offence “to prevent or stop a person in charge of a child from feeding milk to that child in a public place or on licensed premises”.
- Setting the table (NHS Health Scotland, 2015) focuses on promotion of healthy eating, physical activities and a healthy weight during early years – in order to improve health outcomes and reduce health inequalities. Moreover, it highlights the role of childcare providers and education in shaping dietary patterns in young

⁷ <https://www.eatbetterfeelbetter.co.uk/> [accessed 29.09.2015].

⁸ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/340869/2014-250_-_eatwell_plate_Final_version_2014.pdf [accessed: 23.10.2015].

⁹ <http://www.gov.scot/Resource/0042/00421385.pdf> [accessed 14/10/2015].

children as it has been argued that infancy and early years is a crucial time for development of healthy dietary profiles (Lioret et al., 2015). As such, the framework recognises that providing healthy and nutritionally balanced meals and snacks in childcare settings is hugely important, particularly in meeting the needs of vulnerable families.

- Preventing Overweight and Obesity in Scotland (Scottish Government, 2010a) highlights the importance of healthy lifestyles and physical activities from the early years in order to prevent overweight and obesity and negative health outcomes they are associated with.

3.23. The ever growing body of evidence produced in the UK around health inequalities show that dietary patterns and nutrient-intake (amongst other health-related factors) remain socially graded as members of lower socio-economic populations are more likely to have less healthy diets than their more affluent and/or better educated counterparts. Unfortunately, even though a range of initiatives and strategies have been implemented, no significant changes leading to a reduction in health inequalities have occurred yet (Dowler, 2008). For example, as Rowett Institute of Nutrition and Health (Presentation to Child & Maternal Health Policy, January 20, 2015) reports, women living in high deprivation areas are more likely to be underweight or obese which is further related to their children health outcomes. These figures are especially alarming as Scottish women who are nutritionally vulnerable are also more likely to deliver babies that are under- or overweight at birth: adolescents - 1 in 20 births; underweight women – 1 in 10 births and obese women – 1 in 5 births

Do we achieve healthy diets in Scotland?

3.24. The National Diet and Nutrition Survey (PHE, 2014b) and Diet and Nutrition Survey of Infants and Young Children in Scotland (Scottish Government, 2013a) provide information on dietary habits, nutrient intake and nutritional status of adults, children above 1.5 and infants (4-18 months) in Scotland. Their findings suggest that average daily intakes of most vitamins and minerals from food sources are above or close to the Reference Nutrient Intakes (RNI) for all age and sex groups, except for vitamin D and folate intakes. Yet, the Scottish nation undoubtedly struggles with meeting dietary and nutrition recommendations, especially relating to the consumption of 5 portions of fruit and vegetables per day. For example, only 1 in 5 adults and 1 in 8 children consume 5 portions of fruit and vegetables a day as recommended in the eatwell plate (PHE, 2014a). Supplement-intake also remains low, with only 30% of women using some kind of vitamin

or mineral supplements. In particular, very few women use folic acid supplements (only 4% of those 16-24, which increases to 10% amongst 25-34 year olds only to decrease again to 4% amongst those over 34; Scottish Government, 2014; for details see the Scottish Government report¹⁰). At the same time, the intake of saturated fatty acids, non-milk extrinsic sugars (NMES) and salt remains above dietary recommendation levels (PHE, 2014b). Similarly, national intake of daily energy requirements is still too high with, for example, three quarters of children aged 4-18 months exceeding their daily energy requirements (Estimated Average Requirement, EAR; Scottish Government, 2013a).

3.25. Moreover, alarming and increasing levels of obesity have been reported in Scotland, with 68% of men and 61% of women being overweight or obese, and 1 in 3 children being at risk of becoming overweight or obese (Scottish Government, 2014). As such, it can be argued that the diets of a considerable number of adults and children in the UK remain relatively unhealthy: high in energy (from refined carbohydrate and saturated fats) but poor in micronutrients and dietary variety - with still insufficient consumption of fruit, vegetables and oily fish (SACN, 2011).

3.26. Furthermore, Westland and Crowley (2012) point out that even though the key principles of healthy diets for children and adults are the same, nutritional demands of children significantly differ from those of adults due to their rapid growth (“a regulated process by which the organism increases in mass, size and complexity”; SACN, 2011:115). Unfortunately, many children remain at risk of deficiency of vitamin A, riboflavin, vitamin B6, folate, vitamin D, calcium, iodine, iron, magnesium, potassium and zinc (Westland & Crowley, 2012). Additionally, findings from clinical literature suggest that vitamin D, iron and n-3 PUFA (polyunsaturated fatty acids) are nutrients that are potentially insufficient in all toddlers and young children’s diets. This evidence shows the need of vitamin and mineral supplementation to diets which also should be richer in fruit, vegetables and oily fish (Decsi & Lohner, 2014).

3.27. The most worrying findings, perhaps, suggest that some proportion of the UK population have very low intakes (below the Lower Reference Nutrient Intake, LRNI) for most of the nutrients (PHE, 2014b). In particular, around 8% (or less) of children aged 4-18 months) were reported to have a daily intake of vitamins and minerals from all dietary sources below LRNI (except for iron – with intake below LRNI recorded for as many as 10-14% of children; Scottish Government, 2013a).

¹⁰ <http://www.gov.scot/Resource/0046/00464858.pdf> [accessed: 09.09.2015].

Dietary patterns of low income families in Scotland:

3.28. While overall health behaviours of low income families remain the same for the general British population, some aspects of diets, energy and nutrient intake continue to differ (Nelson et al., 2007; Scottish Government, 2014). Low income populations, in comparison with those more affluent, are reported to consume:

- less wholegrain bread, fruit and vegetables (for example consumption of fruit and vegetables by children aged 4 to 18 months in receipt of the HS vouchers is significantly lower in comparison to the average consumption by this age group; Scottish Government, 2013a);
- more non-milk extrinsic sugars (NMES), soft drinks (not diet drinks), processed meats and whole milk (Nelson et al., 2007).

3.29. What is more, economic factors, such as inadequate financial resources were reported as the most common barrier in achieving healthy diets (e.g. 1 in 3 of the survey participants reported that the food prices were the key factor influencing their food choices; Nelson et al., 2007). Similarly, in a qualitative study by Dowler and Lambie-Mumford (2015:420) low income families reported that buying “much cheaper food (which they usually also regard as of poorer quality or unacceptable to cultural patterns) or so - called ‘fast food’ because it requires no cooking” is one of their main food management strategies under austerity and on low budgets. As such, factors that contribute to poor diets in low income families have predominantly fiduciary and economic causes including the unaffordability and difficulty accessing fresh food as well as the rise in food prices (McFadden et al., 2014). Income was found to be a crucial constraint in accessing healthy foods and consequently a restraint on dietary choices (Lucas et al., 2015). Accordingly, the links between poor diets and dietary choices and poverty and deprivation are clearly visible (Attree, 2006; Khanom et al., 2015).

3.30. Findings of the health, nutrition and diet surveys (Nelson et al., 2007, Scottish Government, 2013a & 2014) lead to another important question, namely, whether the public health strategies aiming to improve diets and nutrition are effective and actually lead to the reduction of health inequalities. In order to attempt to answer these question one would at first have to determine which factors actually contribute to shaping dietary profiles.

3.31. A considerable body of research suggests that dietary profiles and preferences emerge in infancy and early years and are socially constructed (Lioret et al., 2015). Furthermore, health behaviour is found to be affected by a set of interwoven determinants: both individual (motivation and abilities) and environmental (opportunities that emerge from various environments; Brug et al., 2008). A narrative review by Brug and colleagues (2008) informed by a number of systematic reviews identified:

i) Individual-level motivational factors influencing health behaviour that encompass:

- tastes and preferences;
- nutritional knowledge;
- attitudes and intentions ;
- abilities;

ii) Environmental (or opportunities) factors that include:

- availability of and access to healthy or unhealthy choices;
- economic costs of healthy or unhealthy foods;
- political regulations/strategies that affect dietary choices (taxing unhealthy products, subsidies on healthy foods, food standards etc.) and
- social networks, communities and cultural norms - “the social and cultural subjective and descriptive norms and other social influences”; Brug et al., 2008:309; Dowler, 2008).

3.32. A qualitative study by Khanom and colleagues (2015) examining the barriers low-income parents with infants from Wales encounter in achieving healthier diets seems to support the theory that dietary behaviour is influenced by a complex and multidimensional relationship that exists between individual and environmental level determinants. The interplay of a number of factors that contribute to unhealthy dietary choices have been identified by participants themselves and include: shift work, lack of access to personal transport, inability to cook, accessibility of fast foods and unavailability of healthy foods (also due to the high prices), family income, own childhood diets, peer pressure, food preferences of the family members, especially that of a father (Khanom et al., 2015).

3.33. Yet, as Brug et al. (2008) point out, the majority of the research on dietary behaviours is too excessively focused on the individual-level factors influencing such behaviours, while neglecting to situate them within a broader micro- (e.g. home, schools, restaurants, workplaces etc.), and macro-environmental contexts (such as political regulations and strategies that indirectly affect dietary choices).

3.34. Similarly, multiple dietary and nutritional policies and strategies currently operating in the UK tend to be mostly informed by individual-level factors research (Brambila-Macias et al., 2011). This is therefore the basis for an argument that current responses to health inequalities which attempt to achieve better health outcomes through influencing individuals to adopt healthier lifestyles (ergo – through tackling individual-level motivational determinants of eating behaviours; Brambila-Macias et al., 2011; Brug et al., 2008; Dowler, 2008) remain too narrow. Consequently, their success is hampered as they are poorly supported by initiatives that recognise an adverse impact of broader structural inequalities and environmental factors at diets and dietary patterns (Attree, 2006). This is especially true in the light of evidence suggesting that in environments which provide opportunities for healthy eating, the role of individual factors may be much less significant (Brug et al., 2008).

3.35. Moreover, health promotion campaigns, such as social marketing and nutrition education (e.g. Eat better, feel better or eatwell plate campaigns discussed in more detail in section 3.22), were found to improve public awareness of healthy diets and lifestyles but ineffective at getting these recommendations adopted by the target-populations (Brambila-Macias et al., 2011, Griffin et al., 2015). The currently high and increasing part of the population that is overweight or obese can serve as another example of the relatively low rates of success of initiatives promoting healthy lifestyles amongst the British population. Similarly, Attree's (2006:75) attempts to critically assess contemporary public health policies in the UK led her to the conclusion that "the emphasis in policy documents on individual choice, coupled with an ethos of empowered consumerism, underplays the limitations on achieving a healthy and nutritious diet experienced by low-income households." Therefore, it is broadly argued that health promotion strategies, in order to be effective, should be combined with the micro- and macro-level strategies protecting individuals from availability of opportunities for unhealthy choices while providing them with more opportunities for healthy options (protectionist approach; Attree, 2006). Notably, such a combined approach (of health promotion strategies with a protectionist approach) has been found to be rather effective in the history of public health (e.g. in reducing or even eradicating certain diseases, reducing smoking etc.; Brug et al., 2008).

3.36. As such, in order to support low-income families in making healthier dietary choices as well as to reduce barriers to making such choices, different types of interventions have been suggested at both – local/community and national levels (Khanom et al., 2015), including:

- subsidising healthy foods by the state;
- taxing unhealthy foods or removing VAT from healthy foods (Scottish Government, 2015b)
- improving access to affordable and good quality healthy foods in the local areas and local supermarkets while reducing access to fast foods;
- reducing promotions of unhealthy foods in the supermarkets and increasing promotions on healthy foods;
- legislation in place ensuring that food manufacturers produce good quality and healthier food products, low in fats, sugars and salt;
- providing practical advice on healthy cooking – e.g. through offering community cooking classes for adults/parents;
- improving school cookery classes directed at children and young people;
- recognising the role of schools/education in influencing healthy diets;
- providing information about healthy lifestyles in workplaces.

Interestingly, most of above interventions, proposed by low-income parents in Wales (Khanom et al., 2015), seem to be compatible with a body of research suggesting a combined approach to be the most effective strategy in influencing and improving diets and nutrition of low income populations (Attree, 2006).

3.37. Nevertheless, it seems that the Scottish Government's most recent initiatives acknowledge the importance of combining health promotion initiatives with protectionist approaches (as defined in section 3.34), at least to some extent and in relation to micro-environments such as schools. For example, the previously mentioned guidance 'Setting the table' (NHS Scotland; 2015), attempts to shape dietary patterns as early as possible through providing opportunities for healthy choices and restricting access to unhealthy ones in childcare settings. The effectiveness of this strategy has not yet been assessed; but the evidence presented above does suggest that the improvements in Setting the table (NHS Scotland, 2015) are likely to be successful. Furthermore, in the Improving Maternal and Infant Nutrition (Scottish Government, 2011a) action plan, the Scottish Government has expressed its commitment to implement strategies that would target a range of organisations (including private sector companies) in order to influence the ways in which they produce food products directed at children or market them. Their role in supporting healthier eating-behaviours could be crucial, especially given that the evidence suggests that policy initiatives targeting markets and food manufacturers (e.g. through introduction of taxes and/or subsidies and nutrient and food standards) have been the most effective, despite also being more intrusive (Brambila-Macias et al., 2011).

3.38. This chapter summarised the current research on nutrition, diet and vitamin supplementation before and during pregnancy and early years. This was done for two main reasons. Firstly - in order to provide policy makers with the most up-to-date evidence on the impact of nutrition, diet and vitamin supplements on achieving good health outcomes amongst pregnant and breastfeeding women and for normal growth and healthy development of young children (e.g. Baskin et al., 2015; Westland and Crawley, 2012). Secondly – in order to inform an on-going discussion on the universal provision of free vitamins to all pregnant and breastfeeding women and young children against the targeted provision (as set up by the Healthy Start) that will be investigated and critically assessed in the recommendations chapter). It also discussed the policy framework that focuses on supporting maternal and children’s health, diet and nutrition, while also recognising the extent and impact of structural barriers experienced by low income populations. The literature highlighted that the visible links exist between poor diets and dietary choices and poverty and deprivation. Finally, this chapter examined whether and to what extent a range of public health strategies aiming to improve diets and nutrition are effective and contribute to the reduction of health inequalities in Scotland. The following chapter will attempt to evaluate the operation of one of such strategies, the Healthy Start Scheme.

4. EVALUATION OF THE HEALTHY START SCHEME

4.1. This chapter evaluates the operation of the Healthy Start Scheme. In particular, it examines its impact on diets, nutrition and health of pregnant and breastfeeding women and young children living in disadvantage and barriers to the scheme experienced by its beneficiaries. One should bear in mind, however, that not much research aiming to evaluate the Healthy Start Scheme has been conducted so far and majority of the evidence comes from the studies conducted in England only (see section 1.9 for details). This chapter also discusses the role of the nursery milk in young children's diet and health.

4.2. Following a discussion in the previous chapter on state's initiatives aiming to improve diets and nutrition in Scotland, one could ask where to position the Healthy Start Scheme within the public health policy realm. It is argued that its main focus is on influencing health, nutrition, diets and eating habits of low-income mothers and their children (individual motivational level factors). Yet, this is attempted through providing them with welfare benefits that contribute to cover the economic costs of healthy foods (environmental factors; Brug et al., 2008). As such, it can be argued that the Healthy Start Scheme combines elements of health promotion (e.g. by labelling it the Healthy Start) with the micro-level strategies that are supposed to facilitate healthy food choices amongst a targeted population. Nevertheless, the problem of how the Healthy Start scheme meets its aims and how effective it is in meeting low-income families' needs requires a closer examination.

4.3. In particular, evaluation of the scheme seems to be of great importance, especially in the light of claims that the authors of the Healthy Start policy had not fully taken into account the views, experiences and needs of its users (Matchell, 2015). As Matchell (2015) points out, development of the welfare foods initiative was driven by the need to develop "a 'policy package' that is appealing to visible actors" (Matchell, 2015:26). This rather short-term approach was marked by an initial budget which was restricted from the start and in consequence jeopardised the scheme's ability to fully meet its aims on the one hand and to reduce health inequalities on the other (Matchell, 2015). This criticism reinforces the need for improvements which are based on the views, knowledge and experiences of a range of scheme stakeholders, most importantly, which include those of its beneficiaries and potential users.

4.4. In order to achieve this goal, this chapter on evaluation of the Healthy Start Scheme's effectiveness will seek to answer (or at least contextualise and cast light on) following research questions:

1. How the Scheme operates, particularly:
 - What works well from the stakeholders' perspective?
 - What are the problems, challenges and barriers experienced by stakeholders?
 - What is the impact (if any) of the Healthy Start Scheme on its beneficiaries' diets, dietary habits and health outcomes?
2. Does the Healthy Start Scheme meet its aims and aspirations (as defined in section 2.9)?
3. What can be improved and/or changed under the current legislation?

4.5. The next two subchapters will focus on the current operation of the Healthy Start Scheme and its impact on health, diets and health of low income populations. They will then attempt to evaluate the effectiveness of the scheme against its aims and objectives as defined in section 2.9. However, the subchapter on the Nursery Milk, due to lack of literature on the scheme, will only focus on two issues: whether the NMS is beneficial for young children's health and whether there is other alternative to provide young children with free milk. The recommendations chapter will attempt to link all the findings together while offering potential solutions to increase the Healthy Start Scheme's effectiveness in improving diets and nutrition of pregnant and breastfeeding women and young children from disadvantaged backgrounds.

Impact Of The Healthy Start Foods On Health, Diets And Nutrition Of Low-Income Families

I think they [food vouchers] are a good thing because you can only buy milk and fruit and veg, so they're really encouraging. (participant quoted by Khanom et al., 2015:9)

£3.10 a week when you are working doesn't feel like much but when you're not working and are on benefits it does make a difference, it's £3.10 a week you have of your money to spend on other things aside from milk, fruit and veg. (participant quoted by Lucas et al., 2015:462)

4.6. The literature demonstrates the importance of the Healthy Start Food Vouchers from the perspective of low-income families and health and social care practitioners (Khanom et al., 2015; Lucas et al., 2015; McFadden et al., 2013). Scottish professionals in the field of

Child and Maternal Health and Nutrition hold the opinion that the Healthy Start Scheme has been reasonably successful and has shown the positive indicators of improved outcomes around increased access, uptake and awareness (Scottish Government, 2015b). Furthermore some health professionals see the scheme as playing an important role in improving the health outcomes of pregnant women and their children in low income families (although there is lack of research/evidence to support this perception, McFadden et al., 2013). More problematically, Lucas and colleagues (2013:39) report that “HS coordinators and frontline health and children’s professionals have limited or no data on the impact of the scheme on families” and many of them perceive the scheme as having a limited impact on influencing the diets of low income families, with some even describing it as “a drop in the ocean.”

4.7. At the same time, women registered for the scheme reported that it made them think more about health and diets (McFadden et al., 2013) or even contributed to them making healthier dietary choices (Khanom et al., 2015). The “nudge”-effect of the policy (intending to influence dietary behaviours of targeted population) has been clearly visible in these women’s accounts – at least in relation to the choices made within the scheme. Yet, it remains difficult to assess what impact the scheme has had on other dietary choices since objections have been raised that the vouchers may displace the amount of money reserved for healthy choices, making it available for the purchase of unhealthy food products (McFadden et al., 2013).

4.8. Nevertheless, low-income women declared that the availability of the food vouchers increased not only the quantity but also the variety of fruit and vegetables they purchased (McFadden et al., 2014); or that they were able to experiment with different fruits and vegetables for their children – which they would normally not be able to afford. At the same time, food vouchers seemed to have a greater impact on the food choices and eating habits of breastfeeding women as they spent the vouchers on fruit/vegetables/cow’s milk.

4.9. Women using formula milk reported to spend the vouchers on formula (and reported that it was not enough to cover its costs, McFadden et al., 2014). Furthermore, the main item acquired with the use of the food vouchers, according to Infant Feeding Survey, has been formula milk (McAndrew et al., 2012). That being said, some critics argue that barriers to breastfeeding are amongst factors that limit the potential of the Healthy Start to improve maternal nutrition and diets (McAndrew et al., 2012). Additionally, there is a lack of consensus amongst health professionals about whether formula milk should be a part of

the scheme. By some the inclusion of formula milk under the label 'the Healthy Start' is perceived as conflicting with the promotion of breastfeeding and – in a broader sense – of healthy choices and good health outcomes in the future (McFadden et al., 2015; Scottish Government, 2015b). Moreover, it remains unclear whether including the formula in the scheme may have an adverse impact on breastfeeding rates amongst mothers from less affluent backgrounds (McAndrew et al., 2012). For example, women in receipt of the vouchers are reported to be less likely to breastfeed not only than average but also than women who are eligible for the HS but not registered or women who have never been in employment (McAndrew et al., 2012). However, this correlation remains unclear and may interact with other factors, such as socio-economic disadvantage, lower educational attainment and age with mothers eligible for the scheme being younger than average (McFadden et al., 2013). On the other hand, others argued that low income families should have access to resources to feed their children and recognised access to formula milk through the scheme provides a nutritional safety net for infants growing up in disadvantaged communities (McFadden et al., 2013). They also pointed out that the vouchers value should cover the whole costs of the formula milk (McFadden et al., 2014).

4.10. It should also be highlighted that food vouchers were perceived to be a financial safety net that helps with the costs of food products and to some extent improves low-income households' food security (Lucas et al., 2013). In particular, some women pointed out that the food vouchers have been an important part of their food budgets, describing it as: "a 'big relief' or as making a 'big difference'" (Lucas et al., 2015:462). As such, for some beneficiaries food vouchers serve as resources that are actually secured for food, and this kind of security has been highly appreciated (Lucas et al., 2015). Yet, the Healthy Start scheme alone remains an insufficient food managing strategy in times of austerity. As Dowler and Lambie-Mumford (2015) argue, in order to improve food security, the state should guarantee an income which is sufficient to secure food against other expenses as well as economic and physical access to affordable healthy foods that also meet cultural needs. Currently, the Healthy Start scheme itself, even when combined with a range of other public health strategies, is argued to be "insufficient to outweigh the negative effects of poverty on nutrition" (Attree, 2006:75).

4.11. There is a lack of evidence on the HS scheme's impact on improving health outcomes or reducing health inequalities amongst those eligible (McFadden et al., 2014). It is anticipated that we will need to await the publication of an on-going research project investigating the impact of the HS scheme on maternal and children health outcomes with

the use of secondary data from Growing Up in Scotland Survey and the Infant Feeding Survey in order to obtain such evidence.

4.12. Furthermore, a significant number of barriers to the scheme including awareness, eligibility, application process, access to registered retailers or low value of food vouchers, discussed in detail below, has also been reported that will need to be addressed if the scheme is to work more effectively.

Awareness:

4.13. There are relatively low levels of awareness about the scheme amongst the general population as well as amongst some subgroups entitled to the scheme (McFadden et al., 2014). In particular, non-English speakers, those with low literacy levels, working families on low income and families with changing incomes were often not aware of the scheme. One reason for this may be that some health professionals provide the information on the HS only to the families they consider to be eligible (McFadden et al., 2013; 2014), therefore some eligible families are being missed (Lucas et al., 2015). On the other hand, those who were informed about the HS scheme during their first antenatal visit often reported being overloaded with information, often missing out details concerning the HS scheme (Barbour et al., 2012; McFadden et al., 2014).

Eligibility criteria:

4.14. Although welfare eligibility criteria were reported to be quite straightforward and understandable, criteria regarding tax credits were found to be complex and confusing (McFadden et al., 2014). Household income threshold for families in receipt of tax credits was reported to be definitely too low. In particular, women slightly over the income threshold reported their frustration of not being eligible for the scheme as they believed it would be very useful for them. In other words, low-income families felt the scheme definitely should continue but the eligibility income threshold should be increased (Khanom et al., 2015). The rigidity of the eligibility criteria was also problematic for families in low paid work or with fluctuating incomes as their circumstances often change, leaving them in and out of their entitlement.

4.15. Furthermore, eligibility criteria were also unclear for women under 18 as their entitlement changes from universal into means-tested after the child's birth or upon the mother's eighteenth birthday, and they were often not aware of such changes (Lucas et al., 2015). Following the birth, registering the baby with the HS Issuing Unit was also found

problematic with some parents not being aware of such obligation (Lucas et al., 2015). The subgroups that would benefit the most from the scheme, particularly those who are nutritionally and financially vulnerable such as asylum seekers, low-income families with fluctuating income, remain excluded from the scheme (McFadden et al., 2013, Scottish Government, 2015b).

Application process:

4.16. Most of participants of Lucas and colleagues' study (2015) found the application process easy. In particular, parents reported that their application was processed quickly (received vouchers within 2-4 weeks from applying, unlike other benefits). However, in case of delays or rejection, they rarely understood the reasons why the vouchers stopped, while phoning a helpline was reported to be too expensive (Lucas et al., 2013).

Completing the application form was reported to be time-consuming, complex and sometimes difficult to fill in for some of the beneficiaries (Scottish Government, 2015b). The requirement of needing to have the form counter-signed by a health professional was seen as impeding access to the scheme against its intention to actually initiate the early contact with the health professionals that would provide women with information about healthy diets, nutrition and vitamins supplementation during pregnancy (McFadden et al., 2013).

Other:

4.17. Access to registered retailers was found to be problematic at times, particularly in rural areas or for women from ethnic minorities who reported that they often don't have access to culturally appropriate fruit and vegetables in supermarkets while small shops are often not registered for the scheme (McFadden et al., 2013). Lucas and colleagues (2013) reported that users are more likely to spend their vouchers in supermarkets due to factors such as: convenience, greater availability of foods, lower prices and greater anonymity.

4.18. Some negative experiences of using the food vouchers were reported, but they were rather rare (Lucas et al., 2015). Feelings of shame or stigma attached to using the vouchers were rarely reported either, which may be due to beneficiaries' increased efforts to avoid embarrassment through using a range of strategies, for example by using self-checkouts or the shops known for accepting the vouchers (Lucas et al., 2015).

4.19. Most importantly, perhaps, impact of the scheme on access to healthy foods and improving diets has been undermined by the rising prices of food and costs of living in

relation to the voucher value which has not been increased since 2009 (and it has stood at £3.10; Lucas et al., 2015). Moreover, proposals to include the food vouchers under Universal Credit may also threaten low-income families to secure the money for healthy (or sometimes any) food against other household expenses (Lucas et al., 2015).

Healthy Start Vitamins - A 'Missed Opportunity'?

4.20. Evidence suggests that precise targeting of low income women and young children by the scheme is failing to meet its objectives, although there are some examples of good practice (Lucas et al., 2013; Scottish Government, 2015b). Unfortunately, the Healthy Start Vitamins remain rather a 'missed opportunity' due to a very low uptake of the vitamin supplements and consequently - an increased risk of birth defects and negative health outcomes associated with certain vitamin-insufficiency before and during pregnancy and early years (McFadden et al., 2015).

4.21. Evaluative studies have focused on the causes of these low uptake-rates for vitamin supplements as well as of the barriers faced by low-income families, those eligible, but also those already registered for the scheme, in accessing the HS vitamins (Barbour et al., 2012; Jessiman et al., 2013; McFadden et al., 2015; Moonan et al., 2012; Scottish Government, 2015b). Based on both, beneficiaries' experiences, and on the knowledge and expertise of health and social care professionals, those additional obstacles to vitamin-uptake and the shortcomings of the HS Vitamins component of the scheme can be divided into four categories, namely: barriers experienced by families, challenges experienced by health professionals, eligibility and application process factors, and factors within the operation of the scheme (adapted from MacKenzie, the Healthy Start Leads meeting, September 8, 2015). Furthermore, identifying and addressing barriers to the HS Vitamins scheme will potentially allow us to improve vitamins supplements availability, accessibility and awareness of their importance for women and children's health and well-being.

Barriers experienced by families influencing the effectiveness of the Vitamin Scheme include:

1. Low awareness of the need for and importance of vitamin-supplementation during pregnancy and early years amongst women (Jessiman et al., 2013; Moonan et al., 2012).

2. Information overload during the first prenatal visit, harming the processing or memorising of information received about the importance of vitamin-supplementation (Barbour et al.; 2012).
3. Information about nutrition and vitamin supplements in pregnancy often provided not early enough.
4. Low motivation to use vitamin supplements before and during pregnancy and breastfeeding and/or in early years (Jessiman et al., 2013) due to:
 - Beliefs that vitamins are not necessary if having healthy diets;
 - Good child health outcomes in previous pregnancies without the use of vitamin supplements quoted as support for not using vitamin supplements;
 - A dislike of taking tablets or administering drops;
 - Concern that the vitamins might cause health problems in children;
 - Confusion amongst parents and some professionals about when to start vitamins supplementation in early years (whether to start at 1 month or 6 months after birth, to stop if a child exceeds 500 ml of formula milk, or whether to restart when the child moves to cow's milk at the age of one);
 - Difficulties measuring the correct dosage of liquid drops;
 - Not seeking nutritional or medical information from health professionals.

Challenges experienced by health professionals influencing the scheme's success include:

1. Lack of awareness of the importance of and the current recommendations on the vitamin supplements pre- and during pregnancy as well as early years amongst some health practitioners (Barbour et al., 2012; Jessiman et al., 2013; Moonan et al., 2012; Scottish Government, 2015b), such as:
 - scepticism/negative attitudes towards vitamin supplements;
 - limited knowledge about the current recommendations regarding vitamin intake for pregnant/breastfeeding women and young children; for example, Lockyer and Porcellato (2011) indicate that the level of awareness of risks

associated with vitamin D deficiency and of groups being at risk of deficiency amongst health professionals in the UK varies considerably, with only half of the respondents being aware of the UK recommendations for vitamins supplementation;

- lack of trust in vitamins suppliers.
2. Lack of awareness of the Healthy Start Scheme amongst some health professionals (e.g. GPs, midwives, health visitors) or about some aspects of the scheme (e.g. who is responsible for vitamins distribution, where vitamins can be collected by eligible women) etc.
 3. Low promotion of the scheme by health professionals (due to low awareness amongst them about vitamin-supplementation as well as about the HS scheme, attitudes towards vitamin-supplementation as well as workload and/or low frequency of appointments).

The influence of eligibility criteria and the difficulty of the application process on the scheme's take-up and success ranges:

1. From complicated or limiting eligibility criteria (Lucas et al., 2015; McFadden et al., 2013) such as:
 - Women and children who would benefit from the scheme are not entitled (e.g. asylum seekers, pregnant women in prison, low income families exceeding income threshold);
 - Eligible pregnant women are entitled to free vitamins from the 10th week of gestation even though folic acid supplementation is recommended before and during first 12 weeks of pregnancy in order to prevent neural tube defects in infants;
 - Free vitamins are only available for eligible children under 4 even though supplement-recommendations include children until their fifth birthday (such as: DH, 2012).
2. To a difficult application process (Jessiman et al., 2013; Lucas et al., 2015; McFadden et al., 2013; Scottish Government, 2015b) involving or complicated by:

- Completing a reportedly time-consuming and inaccessible or difficult application form;
- Changes in family financial circumstances which may act as a barrier - e.g. fluctuating income, experiences of homelessness, moving in and out of employment may cause some groups of beneficiaries to lose their entitlement;
- The need to re-register for the HS Scheme after the child's birth or after reaching 18 years old is a requirement eligible families are often not aware of and which acts as a barrier for access to the scheme.

Factors affecting the operation of the Healthy Start Vitamins Scheme are:

1. The administration of the scheme by Welfare provisions has been criticized as undermining public health initiatives directed at all pregnant and breastfeeding women as well young children for sending the wrong message about vitamins insufficiency (especially vitamin D and folate) being linked with poor diets and poverty. On the other hand, access to the scheme through the health system may exclude women who get involved with the health services irregularly (McFadden et al., 2015); e.g. contact with NHS services often decrease when children get older (Scottish Government, 2015b).
2. The complex distribution, ordering and reimbursement system creates:
 - Difficulties in finding an accessible and effective location for suitable distribution (Moonan et al., 2012), e.g. due to the size and geographic spread of the populations under certain NHS Boards (Scottish Government, 2015a:9);
 - Difficulties in supplying the necessary vitamins: national and local supply chains remain “logistically complex, requiring the time, resources and creative thinking of a range of local and regional practitioners” (McFadden et al., 2015:6). Moreover, as distribution arrangements are agreed locally, health professionals may not be aware of the location or even existence of access points. In consequence, “the current targeted approach is reaching very few of those eligible for Healthy Start or who are at risk of vitamin deficiency” (McFadden et al., 2015:6).

- Difficulties with finding funding to order vitamins (McFadden et al., 2015);
- Difficulties in keeping record of how many vitamin supplements were provided to eligible families and then simultaneously claiming reimbursement from the Department of Health while providing the coupons as proof (McFadden et al., 2015);
- Difficulties with availability and accessibility of vitamins generated by: vitamins short shelf lives (e.g. vitamins going out of date before being distributed to eligible families, no available stock when necessary); financial strain on low-income families due to the helpline being too expensive to call; confusion around the use of the vitamin coupons amongst eligible families; limited access to distribution points (e.g. in some localities availability was restricted to one centre at a limited time only or local distribution points were too far away for some eligible families to access them; Lucas et al., 2015; McFadden et al., 2015; Scottish Government, 2015a).

Do We Need Nursery Milk?

4.22. The Nursery Milk Scheme, alongside the Healthy Start Scheme, constitutes the Welfare Foods policy in the UK. While two previous subchapters focused extensively on evaluation of the Healthy Start Scheme, this subchapter, due to lack of literature on the NMS, will only discuss two issues: whether it is beneficial for young children's health and whether there is other alternative to provide young children with free milk.

4.23. Evidence suggests that in developed countries such as the UK, children's diets remain nutrient-sufficient for the majority of micronutrients (Scottish Government, 2013a; Westland and Crawley; 2012). However, it has also been widely reported that iron, zinc, vitamin D, iodine, folate and vitamin B12 insufficiency still may occur quite commonly (Agostoni et al., 2013; Decsi and Lohner, 2014; Shergill-Bonner, 2013).

4.24. Cow's milk and other dairy products remain the main dietary sources of calcium, vitamin D (but only if fortified, e.g. in the US but not in the UK) and iodine (Pearce et al., 2004). Cow's milk is also an important source of other vitamins and minerals, especially: protein, vitamin B and B12 (for more information about their role in the human body please

consult the British Nutrition Foundation website¹¹) and vitamin A (NHS Health Scotland, 2015). Furthermore, the Setting the table guidance (NHS Health Scotland, 2015) recognises the importance of cow's milk in diets of young children, recommending full fat milk for children between 1 and 5 as one of 3 required servings of dairy products a day.

4.25. On the other hand, excessive milk intake has been linked with an increased risk of iron deficiency or anaemia and therefore toddlers should not exceed 500 ml/day of unmodified cow's milk as (especially amongst low income families whose diets are more likely to be poorer in foods containing iron (such as fish or non-processed meat (Domellöf, et al., 2014)). Nevertheless, findings of 'Diet and Nutrition Survey of Infants and Young Children in Scotland' (Scottish Government, 2013a) suggest that for the majority of toddlers, mean consumption of cow's milk stands at 329 ml per day, so it remains important to promote its inclusion in children's diets from a public health point of view.

4.26. As such, the evidence quoted above serves to argue a reduction in children's dairy-intake, and of milk in particular, may be risky for their overall nutrition and lead to negative consequences for their health and growth, especially for those who are already nutritionally vulnerable (e.g. growing up in disadvantage groups or communities; Shergill-Bonner, 2013; Westland and Crawley, 2012). This is why Food Based Dietary Guidelines (FBDG) "generally advise the use of cow's milk in moderate quantities (around 300 to 500 ml per day) as an important source of nutrients for young children" (Agostoni et al., 2013:73).

4.27. The Nursery Milk Scheme entitles all children under five (regardless of their background) who spend more than two hours in a day care to receive a free daily drink of milk (1/3 pint or 189 ml). However, it remains under child care providers' control whether to enter the scheme and claim the reimbursement of the full costs of the milk they provide. Unfortunately, the current uptake of the scheme stands at approximately 50%.

4.28. What could be done to increase the uptake amongst eligible childcare providers? Should the money spent on the NMS be included into the Foods and Vitamin parts of the HS budget instead and provided directly to low income families (Scottish Government, 2015b)? These questions remain to be answered and provide opportunities for future research.

¹¹ <http://www.nutrition.org.uk/attachments/article/721/Milk%20and%20dairy%20foods.pdf> [accessed 22/09/15].

4.29. This chapter focused on the evaluation of the Healthy Start Scheme in Scotland. In particular, it sought to establish how the scheme operates, what does and does not work from the stakeholders' perspective and how successful it is in meeting its aims and aspirations. Findings from literature suggest that the Healthy Start Scheme is perceived as an important initiative by its stakeholders. Yet, a number of barriers to the scheme need to be addressed if it is to work more effectively and better meet its beneficiaries' needs. The following chapter will discuss in detail which actions can be taken in order to improve the operation of the HS scheme.

5. RECOMMENDATIONS

5.1. In light of evidence presented in the previous chapter, increasing awareness of, availability of and access to the Healthy Start Scheme remains an important public health objective. This chapter offers possible actions that can be undertaken in order to improve the scheme's effectiveness. In particular a number of barriers and shortcomings, discussed in the evaluation chapter, should be addressed. Due to the specificity of each component of the HS scheme, proposed recommendations will be discussed separately under two sub-headings: the Healthy Start Foods and the Healthy Start Vitamins. It is also worth noting that propositions of separating the HS Foods from the HS Vitamins have been also raised by a range of health and social care professionals in Scotland (Scottish Government, 2015b).

Healthy Start Foods

5.2. Awareness about the HS Foods scheme and importance of healthy diets and nutrition before and during pregnancy and early years should be increased. As the main sources of information about the HS scheme, according to findings of the Infant Feeding Survey (McAndrew et al, 2012), include: midwife, health visitor, a partner, friend or relative and the local benefit office or Jobcentre Plus, it would be reasonable to use these networks better to promote the scheme and its message, especially in the local/community contexts. Increasing collaborative multiagency work between health and welfare services, providing every pregnant woman with health advice from health professionals and ensuring that women understand and are aware of the scheme (McFadden et al., 2013; Scottish Government, 2015b) are some of the strategies which should be implemented in order to increase the awareness of the scheme.

5.3. Eligibility criteria to the HS scheme could be extended to low-income women in the first weeks of pregnancy and children up to the age of five. Furthermore, families with uncertain immigration status (e.g. asylum seekers) should be entitled to the HS Food Vouchers

5.4. Income threshold eligibility criteria should be increased in order to include families with fluctuating incomes, in and out of employment while the criteria regarding tax credits should be simplified. Other propositions include basing eligibility criteria on household income and family size rather than on income threshold (Khanom et al., 2015; Scottish Government, 2015b).

5.5. Voucher value should keep pace with rising food prices. In particular, Scottish health professionals provided an example from “public health group in Glasgow who worked out what an average diet would be for a family of four. They discovered it would be possible to live, not badly, on £6 - £8 a week on food vouchers, but only if someone had the ability to drive to the shops, budget and cook” (Scottish Government, 2015b:16).

5.6. The application process should be simplified: application forms should be made as easy to fill in as possible and women should be offered help with filling in the form. The requirement for a counter-signature by a health professional should be removed, along with the need to reapply once a child is born. An alternative solution, proposed by Scottish health, social care and welfare professionals in the field of maternal and child health and nutrition, would be to eliminate the application process completely and subsume it under existing benefit system. They argued that such solution would bring together HMRC, DWP and the NHS “with the aim of making the application process less difficult and time-consuming” (Scottish Government, 2015b:17).

5.7. The existing helpline should be made free of charge for mobile phone calls, as many low-income families do not have landlines (Lucas et al., 2013).

5.8. More small and local shops, especially in rural areas, should be encouraged to join the scheme in order to increase its availability as well as access to culturally appropriate foods (Lucas et al., 2013).

Healthy Start Vitamins

5.9. This subchapter will discuss recommendations for two scenarios – if vitamin-supplementation was to become a universal provision (section 5.10) and under the current framework for the Healthy Start Vitamins – the targeted provision (section 5.11).

5.10. A strong support amongst health professionals for the universal provision of vitamin supplementation for all women planning pregnancy, pregnant women and young children under age 5 has been widely reported across the literature (Jessiman et al., 2013; McFadden et al., 2015, Scottish Government, 2015b). In particular, they argue that the universal provision of vitamins would be more cost-effective than a targeted provision as it would reduce the high costs of complex administration or of the treatment of vitamins deficiency. Furthermore, it is also pointed out that universal provision would contribute to improving health outcomes on a national level as well as increase the likelihood of

reaching the most vulnerable and/or disadvantaged populations, including the current beneficiaries of the Healthy Start (McFadden et al., 2015).

- For example, Moy and colleagues (2012) evaluated the effectiveness of a small scale programme of universal provision of free HS vitamins for pregnant and lactating women and young children in Birmingham in terms of reducing symptomatic vitamin D deficiency. They found out that universal provision combined with a public awareness campaign about the importance of vitamin D has increased a supplement uptake rate to 17%. However, despite the still significantly low uptake, the number of cases of symptomatic vitamin D deficiency in children under 5 decreased dramatically by 59% (from 120/100 000 to 49/100 000) while public awareness of vitamin D deficiency has supposedly greatly increased. These findings suggest that the universal provision of vitamin supplements has the potential to improve children's health outcomes and may be cost-effective preventative action.
- Furthermore, NICE (2015) was commissioned to examine whether universal provision of vitamins to pregnant and breastfeeding women and young children would be more cost-effective than the current targeted provision under the Healthy Start Scheme. The reason behind this evaluation was a growing concern about the prevalence of vitamin D deficiency-related diseases amongst young children in the UK. As discussed in section 3, there are also growing concerns about low levels of folic acid supplementation before and during pregnancy in the UK associated with an increased risk of neural tube defects in infants (Bestwick et al., 2014).
- NICE (2015) reported that it would not be cost-effective to provide the universal provision of HS vitamins if only women from the 10th week of pregnancy and children between 6 months and 4 years would be in receipt of free vitamins. However, according to NICE (2015) findings, universal provision would be cost effective as long as the target group could also be extended to all women planning pregnancies and those in their first ten weeks of pregnancy, as well as children up to the age of 5 and infants between 0 to 6 months (according to the SACN recommendations on vitamin supplementation, SACN, 2015).
- Even though NICE (2015) evaluation of cost-effectiveness of universal vitamins provision was initiated by concerns about vitamin D deficiency, there was not enough data to assign a quality of life measure to the effects of vitamin D

supplementation (as well as of vitamins A and C). The main analysis was therefore focused on the impact of universal folic acid supplementation, because it was the only nutrient with a measurable outcome, namely the prevention of neural tube defects. Furthermore, a paucity of data has been reported leading to a model based on a range of assumptions, some of which may have had a crucial impact on the assessment of the cost-effectiveness.

- Similarly, the costs of universal distribution of HS vitamins remain unclear as many different types of routes may be adopted (including pharmacies, health professionals, supermarkets etc.). What the mechanism for distributing vitamins would be and how effective it would be remains to be examined. Similarly, how women planning their pregnancies could be reached by this universal scheme remains unclear (NICE, 2015), not only because they may not be in contact with health professionals; but also because up to 50% of pregnancies in the UK are reportedly unplanned (Bestwick et al., 2014).

5.11. If the universal provision of vitamin supplements for all women planning pregnancy, pregnant women and children under 5 is not implemented, a range of other strategies and actions under current legislative framework could be considered:

- Increasing the awareness of the importance of vitamin supplementation (in particular vitamin D) especially amongst the groups at risk of vitamin-deficiency and front-line health professionals (GPs, health visitors and midwifery teams; Leaf, 2007; Lockyer & Porcellato, 2011; e. g. through specific training for health professionals about the importance of vitamin supplements during pregnancy and in early years, about various aspects of vitamin deficiency as well as about the HS scheme itself along with national and local-level activities promoting the importance of vitamin D supplements; Jessiman et al., 2013; Wood and Cheetham; 2015).
- For example, the new NICE (2014) public health guidance on how to increase vitamin D status amongst at-risk groups (such as pregnant and lactating women and young children) is directed at a range of public and voluntary sector organisations and practitioners, e.g. Public Health England and the Department of Health, Directors of public health, Local authorities, health and social care

professionals, clinical commissioning groups, health and wellbeing boards etc. (for detailed recommended actions and activities see the NICE webpage¹²).

- Recommendations on vitamin supplements should be coming from health professionals as research suggests that women are most likely “to comply with advice from healthcare professionals when it is specific and provides explanations as to why the recommendation is important.” (Lucas et al., 2014:2475).
- Mandatory fortification of food products (such as flour) with folic acid as advised by SACN (2009) so long as a range of safety measures are introduced alongside (for details see the UK Government website¹³).
- To simplify distribution routes (e.g. vitamins to be given out routinely by midwives and health visitors, or to be widely available at various places where women go regularly, such as: supermarkets, pharmacies, children's centres, health centres and GP practices, libraries and local authorities; Jessiman et al., 2013; Scottish Government, 2015b).
- Currently, the eligibility for the HS scheme starts at the tenth week of pregnancy which is counter-productive for folic acid supplementation therefore it should be extended to the first weeks of pregnancy (Scottish Government, 2015b). Similarly, eligible children up to their fifth birthday should be included into the scheme, accordingly with vitamin supplementation guidelines (McFadden et al., 2015; Scottish Government, 2015b).
- The most vulnerable populations should also be entitled to the vitamin supplements – such as asylum seekers or pregnant women in prison.

5.12. This chapter discussed possible actions that can be undertaken in order to improve the operation and effectiveness of the Healthy Start Foods and Vitamins. One should bear in mind however, that only some of the of the recommended solutions are under the Scottish Government’s control as the Welfare Foods Policy remains one of the reserved powers. Yet, the Scottish Ministers may have more decision-making powers over the scheme’s scope, administration and implementation if Welfare Foods are devolved.

¹² <http://www.nice.org.uk/guidance/ph56/chapter/1-recommendations> [accessed: 01.10.2015].

¹³ <https://www.gov.uk/government/publications/sacn-report-to-cmo-on-folic-acid-and-colorectal-cancer-risk> [accessed: 11.10.2015].

6. CONCLUSIONS

6.1. The main purpose of this evidence review was to examine whether and how the Healthy Start Scheme meets its aims and how effective it is in meeting needs of low-income families. To achieve this, a significant number of medical and social literature databases were searched and relevant evidence was identified and evaluated. Yet, rather scarce literature on the Healthy Start scheme that has been produced mostly in England, serves only to limit our knowledge and understanding of its role in improving health outcomes, diets and nutrition of low-income mothers and young children in Scotland.

6.2. On the one hand, undeniably the Healthy Start scheme at least to some extent works as a nutritional and financial safety net for some low income families. On the other, it is argued that the Healthy Start scheme itself, even when combined with a range of public health policies and initiatives, remains “insufficient to outweigh the negative effects of poverty on nutrition” or to provide adequate support for low-income mothers and young children in achieving healthy diets (Attree, 2006:75). Certainly, however this evidence review supports the claim that the initiatives such as the Healthy Start Scheme are useful and needed as they provide low-income families with some level of nutrition and food security (Lucas et al., 2015). Nevertheless, in order to work more effectively and to meet its strategic aims and its users’ needs, a number of barriers and limitations to awareness of, availability of and access to the scheme should be addressed and overcome.

6.3. In particular, the Healthy Start Vitamins remain rather a ‘missed opportunity’ due to a very low uptake of the vitamin supplements and consequently - an increased risk of birth defects and negative health outcomes associated with certain vitamin-insufficiency before and during pregnancy and early years (McFadden et al., 2015). Universal provision of the Healthy Start vitamins to all women planning pregnancy, pregnant and breastfeeding women and young children, fortifying foods with vitamin D and folic acid, national and local-level activities promoting the importance of supplements serve as examples of actions that can be taken by Department of Health, local authorities and a range of public and third sector organizations (NICE, 2014; McFadden et al., 2013; Scottish Government, 2015b). Further research is needed whether, and how, it would be possible to implement the universal provision of vitamins, especially in relation to costs of such provision, types of distribution routes that may be adopted and how to successfully target women planning pregnancy (NICE, 2015).

6.4. Finally, this review offers a broader perspective on the role of the state on how to more effectively support low-income families in making healthier dietary choices as well as to reduce barriers to making such choices. In particular, it argues that poor diets, nutrition and dietary choices are adversely linked with high levels of poverty and deprivation (Attree, 2006; Khanom et al., 2015). For this reason, interventions that recognize negative impact of broader structural inequalities and environmental factors at nutrition, diets and dietary patterns should be considered to be implemented at both – local/community and national levels, alongside the Welfare Foods policy in Scotland (Attree, 2006; Khanom et al., 2015).

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