A nutrition open-learning pack for practising midwives

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Introduction

The Nutrition Task Force Project Team (DOH, 1994) stated that health professionals should have a sound understanding of the general principles of diet, nutrition and health. They recommended that to provide comprehensive coverage of the three broad categories of the principles of nutritional science, nutrition in public health and clinical nutrition including nutritional support, it would require a total of 18 hours of instruction along with practical experience. The position of the American Dietetic Association (O’Sullivan et al., 1998) also takes a similar stance in that they state that for the majority of health care professionals nutrition education is an essential component of the curricula. Pre-registration programmes for midwifery training now usually incorporate these recommendations. However, many practising midwives do not currently undertake nutrition education, although some have increased their knowledge through non-traditional educational routes such as the media. The problem with this form of information is that a substantial body of evidence has emerged over the last few years, which demonstrates that the findings of nutrition research are often misrepresented in the media. In addition the conflicting and negative nature of nutrition claims can also be very frustrating for the consumer (Geiger, 1998).

Dietary recommendations for pregnancy (DoH, 1991) include an increase in the estimated average requirements (EAR) for energy of 200kcal/d (0.8MJ/d) above the non-pregnant EAR, only during the last trimester of pregnancy, and a 6g/d increase in protein throughout pregnancy. It has been established that pregnancy outcome can be influenced by many factors including social deprivation, medical and obstetric complications and poor nutrition (Dowler, 1996; Doyle, 1992; NCH, 1995; Prentice, 1992). The effect of poor nutrition during fetal life has received much attention as a result of its connection to the development of disease in later life. According to Barker (1995) fetal undernutrition occurring in the first, second or third trimester is associated with the incidence of raised blood pressure and haemorrhagic stroke, non-insulin diabetes and coronary heart disease and raised low density lipoprotein cholesterol.
concentration and thrombotic stroke respectively. Other nutritional concerns which have become evident are: avoidance of foods and supplements containing high levels of the retinol form of vitamin A (DoH, 1990); periconceptional folic acid supplementation to reduce the risk of neural tube defects (Health Education Authority, 1996); alcohol intake during pregnancy (Ford et al., 1994) and food safety (DoH, 1996).

A small study involving a random sample of 77 registered midwives explored their education, knowledge and attitudes to nutrition in pregnancy (Mulliner et al., 1995). This study identified that midwives require more education in nutrition during basic training and also following qualification. It was highlighted that considerable numbers of midwives felt unprepared to offer dietary advice to women who were vegetarians, women who had pre-existing medical conditions and to women from ethnic minority groups. For the majority of women however, who experience an uncomplicated pregnancy, the midwife is the health professional most frequently encountered and questioned regarding all aspects of pregnancy including nutrition. Almost half of the sample, however, received a poor score in nutritional knowledge and this may be attributed to the fact that 86 per cent of them had received no education in nutrition following qualification.

It is important to recognise that nutritional knowledge itself does not necessarily alter nutritional attitudes and thus behaviour (Anderson et al., 1993; 1995). However, in view of the related concerns during pregnancy such as food safety or minor disorders such as nausea and vomiting, it is essential that should a midwife be questioned about such issues then she should have the appropriate level of knowledge to answer with confidence. As the study by Mulliner et al. (1995) identified, the majority of the midwives involved had received no nutrition education following their basic training. Even for those midwives that did receive nutrition education during their basic training, the very nature of the topic is dynamic and therefore their nutrition knowledge may have to be frequently modified or updated.

O’Sullivan et al. (1998) advocate that educational programmes for a broad range of health occupations should incorporate a nutrition component, arguing that the extent

should be determined by the degree of client education responsibility and the nutrition service that they provide. In addition, this nutrition knowledge should give health professionals the ability to identify potential nutrition problems and recognise when referral is necessary. Midwives share this responsibility along with physicians, obstetricians, nurses, dentists and any specialists involved with disease management and prevention.

The development of open-learning materials has the potential for aiding not only midwives in changing their nutritional knowledge and the foundation on which they base the advice that they give to the women in their care, but also a wide range of health occupations.

Methods

The respondents chosen for the study were practising midwives in three Trust hospitals within a large regional health authority. A purposive sample of 35 midwives was elected although only 27 completed the post-questionnaire.

Structured questionnaires were developed which used standardised questions, batteries of questions, tests, a rating scale and open-ended questions and were administered both pre- and post-study of the nutrition open-learning pack. The questions were developed in order to meet the aims of the study with some having more than one part. The researcher administered the questionnaires, which provided opportunities to meet the respondents, distribute the nutrition open-learning materials and clarify the aims of the study.

A midwife’s current area of practice, length of time since qualification, whether or not any post-registration nutrition education had been undertaken and the source or methodology of the education were determined. The questionnaire was developed to gain information about their current level of knowledge about general nutrition, pregnancy nutrition, advice about food safety and for minor disorders such as constipation. Initially it was anticipated that responses to the questionnaire would be analysed using a coding frame that had been developed deductively. However, following analysis of the first questionnaire it became
apparent that further inductive codes were required for new categories. A numerical scoring system was devised to enable statistical comparison between pre- and post-questionnaires. A bonus system was incorporated to discriminate between those midwives who correctly answered all the parts of each question and to try to eliminate responses based on guesswork for the multiple-choice questions.

The open-learning pack consisted of a nutrition education resource pack for midwives, (developed by the British Meat Nutrition Education Service and the Centre for Pregnancy Nutrition), an audiocassette and printed material that included a variety of interactive exercises. The rationale for the content was based on the recommendations of the Nutrition Task Force (DoH, 1994), and an audit of the type of enquiry received on the national Eating for Pregnancy Helpline (Centre for Pregnancy Nutrition, 1997). The questionnaire was initially evaluated in a small pilot study and appropriate modifications were made. The pilot study also predicted the expected time frame for completion of the open-learning pack, which was subsequently set at a minimum of six hours.

Scores for each respondent were analysed using statistical products and service solutions (SPSS) and a paired t-test was used to determine any statistically significant differences between scores for the pre- and post-questionnaires.

Results

There was a statistically significant increase \( (p < 0.001) \) in knowledge scores following completion of the nutrition open-learning material, as shown in Table I. The increase in the mean number of bonus points also reached significance \( (p < 0.005) \) as did the decrease in the mean number of wrong answers \( (p < 0.0001) \).

When the responses of individual midwives were analysed the difference in the number of wrong answers \( (p < 0.005) \). However, although the number of unanswered questions and do not know responses also reduced, the difference did not reach statistical significance.

It is not possible to present all of the findings within this paper but the questions that produced the most notable results will be discussed.

In relation to weight gain, initially the majority of the midwives did not know the correct weight gain recommendations and many were still suggesting an expected gain of 12.5kg for all women. After completing the open-learning materials it was encouraging in that half of the midwives demonstrated an appreciation of the appropriate range of weight gain targets according to pre-pregnancy body mass index. There were initially misconceptions apparent such as: obese women did not need to gain any weight at all and that a weight gain of more than 3kg between antenatal assessments would be viewed as a health risk Figure 1.

In relation to energy requirements, only five midwives knew the latest recommendations for an increase of 200 calories/day only in the last trimester of pregnancy. Wrong answers stated increases of between 700 to 2,000 calories per day but without any further explanation and eight midwives admitted that they did not know. As shown in Figure 2, post-questionnaire responses were markedly improved.

Midwives’ knowledge about how to identify women at risk of iron deficiency anaemia was also disappointing (Figure 3) with originally less than half of the sample being able to identify vegetarian/vegan, adolescent, low-income and ethnic minority women as being at increased risk.

| Table I Midwives’ scores for pre- and post-nutrition open-learning questionnaires |
|---------------------------------------------|-----------------|-----------------|-----------------|
|                                    | Nutrition scores | Bonus scores | Wrong answers |
|                                    | Mean             | Standard deviation | Mean | Standard deviation | Mean | Standard deviation |
| Pre-questionnaire | 46.81 | 14.59 | 6.30 | 5.12 | 16.04 | 3.98 |
| Post-questionnaire | 71.29 | 13.04 | 12.20 | 7.48 | 4.36 | 5.20 |
| Significance (paired t-test) | \( p < 0.001 \) | \( p > 0.005 \) | \( p < 0.005 \) | \( p < 0.0001 \) |

Notes: \( a \) Comparisons of group mean number of wrong answers pre- and post-questionnaire; \( b \) Comparisons of individual mean number of wrong answers pre- and post-questionnaire.
Folic acid supplementation was another area that identified confusion among the midwives (Figure 4). On the pre-questionnaire the dosage recommended to prevent a first occurrence of a neural tube defect, 21 midwives answered correctly. However, there was a lack of knowledge about the appropriate dosage to prevent a recurrence, with only ten midwives correctly quoting the dosage with another ten giving a completely wrong answer. Encouragingly, this was improved on the post-questionnaire with 20 midwives answering correctly and 19 midwives receiving the bonus score.

On the pre-questionnaire, questions about the recommended time for folic acid supplements to be taken also revealed a misunderstanding, in that only half of the sample identified the correct answer, i.e. the supplement should be taken when trying to conceive and for the first trimester (Figure 5). A total of 24 midwives in total identified that the supplement should be taken three months before conception. Disappointingly, only three more midwives identified the correct answer on the post-questionnaire.
Discussion

Overall the results of this small study were encouraging in that, following completion of the open-learning pack a statistically significant improvement in nutrition knowledge was demonstrated as shown by the increase in the mean score ($p < 0.001$), bonus score ($p < 0.005$), and decrease in the mean number of wrong answers ($p < 0.0001$) between the pre- and post-questionnaires. The number of wrong answers ($p < 0.005$) given by individual midwives was also significantly reduced on the post-questionnaire. Questions that were left unanswered or given “do not know” responses were also reduced but these differences did not reach statistical significance ($p > 0.05$).

In many areas hospital policy dictates that pregnant women are not routinely weighed and therefore knowledge in this area should not be expected from midwives. The study participants quoted an expected weight gain of 12.5kg or 2.5 stones and historically this was the standard figure that was taught. However, this figure of 12.5kg was never intended to be used as the basis for weight gain recommendations but was the mean gestational weight gain measured on a large population of UK women. Encouragingly though, on the post-questionnaire, knowledge of a range of target weight gains, for underweight, normal weight and overweight women was demonstrated, indicating that these midwives were demonstrating an appreciation of the relevance of having an appropriate body weight prior to pregnancy and its relationship to the range of target weight gains. There was confusion initially regarding the recommended increase in energy requirements during pregnancy and the appropriate stage of pregnancy when dietary energy intake should increase, but a dramatic improvement was evident on the post-questionnaire with the majority of the midwives stating the correct answer.

Iron-deficiency anaemia increases maternal and infant morbidity and all pregnant women in the UK are regularly tested for this deficiency. It is therefore rather worrying that initially the midwives had such a poor knowledge of women who may be at an increased risk of developing iron-deficiency, such as women who are vegetarian/vegan, adolescent, low-income or from minority ethnic groups – although the post-questionnaire results indicated a dramatic increase in their knowledge in this area. It is important that midwives can apply this knowledge to practice, by being able to advise on the best sources of iron and name iron-rich foods for each of the at risk groups. For example, baked beans contain a reasonable amount of iron, and are a highly acceptable food for most teenagers and low-income women. The midwife should have the confidence and competence to further explain about how the absorption of iron from non-animal sources can be enhanced or inhibited and again an increased awareness was demonstrated by the midwives, after they had completed the nutrition open-learning pack.

The report from an expert advisory group on *Folic Acid and the Prevention of Neural Tube Defects (NTD)* (DoH, 1992) was first published in 1992. This report recommended: that all women should eat more folate rich foods, eat foods fortified with folic acid and take a daily folic acid supplement of 400 micrograms, prior to conception and during the first 12 weeks of pregnancy, to reduce the risk of a first occurrence of a NTD. To prevent a recurrence, e.g. for women with a history of a previous pregnancy affected by a NTD, a much larger supplement of 5 milligrams/day was recommended. The Folic Acid Campaign was re-launched in February 1996 in an attempt to educate more members of the public and health professionals about the importance of periconceptional folic acid. In May 1997 an additional scheme promoting the “folic acid flash” was introduced to help consumers choose foods that had either a reasonable folate content or were fortified with folic acid (Health Education Authority, 1996). When the midwives were asked about the recommended dosages to reduce the risk of an occurrence, the majority gave the correct response, however, the dosage required to prevent a recurrence proved to be more difficult for them to answer, with equal numbers answering correctly and incorrectly and some acknowledging that they did not know. The significantly increased number of midwives giving the correct response showed a dramatic increase on the post-questionnaire.

Regarding the question about when to commence folic acid supplements, there was only a marginal increase in the number of midwives indicating the correct answer in the
post-questionnaire. Over half the sample appeared to give the wrong answer initially by indicating that it should be taken for three months prior to conception and for the first trimester, and in the post-questionnaire even more were incorrect. A possible explanation may be because of confusion with advice that some types of oral contraceptive should be ceased three months prior to trying to conceive. Some midwives answered that supplementation should start when pregnancy is confirmed and be continued throughout the first trimester. This was coded as an incorrect response for the analysis by the researcher, but may have been an inherent fault with the questionnaire design in that although it clearly stated to tick agreement with only one statement, many of the midwives ticked more than one. This was perhaps because they knew the correct response but also knew that it is often current practice for many women in the early weeks of an unplanned pregnancy to be advised to begin supplementation and to continue until the end of the first trimester (DOH, 1992). Even so, we do feel disappointed that all the midwives did not answer correctly especially as the HEA (1996) stated during its campaign about periconceptional folic acid supplementation that:

Health professionals have an important and integral part to play in the folic acid campaign (HEA, 1996).

In 1996 and 1997 the HEA sought information about the best sources of health advice for women planning to become pregnant and during pregnancy. The midwife was mentioned by almost half of women in the sample as being one of the best sources of information and midwives were shown to be the best informed of all the health professionals but were not in a position to give women advice before pregnancy.

This was a small study, and therefore the results cannot be widely generalised, however the findings indicate the potential of an open-learning pack in helping health professionals to keep updated with recent developments and in fulfilling their continuing professional educational requirements. However, even though an increase in the nutrition knowledge of midwives was demonstrated, there is still cause for concern because there was still some confusion and inaccuracy particularly about periconceptional folic acid supplementation, recommended alcohol consumption and food safety guidelines during pregnancy.

Open learning is a method that can be effective and convenient, considering that all these issues must be balanced against busy personal and professional lives. The midwives demonstrated that they had the basic knowledge acquired through their training, but by studying the open-learning pack many felt their practice had improved. The individual scores of the midwives were wide ranging, as can be seen from the standard deviations and it would have been interesting to verify the time that individuals actually spent with the nutrition material. Perhaps an even more important point though is the fact that the midwives participated in the study in addition to their normal busy daily workload. This has some important implications in that policy makers and managers in the NHS must be aware that in order for the planned CPD programme to be successful, midwives and all health professionals must have time “protected or ring-fenced”.

References


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