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Preferences of women for web-based nutritional information in pregnancy

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ABSTRACT

Objectives: During pregnancy, women are increasingly turning to web-based resources for information. This study examined the use of web-based nutritional information by women during pregnancy and explored their preferences.
Study design: Cross-sectional observational study.
Methods: Women were enrolled at their convenience from a large maternity hospital. Clinical and sociodemographic details were collected and women's use of web-based resources was assessed using a detailed questionnaire.
Results: Of the 101 women, 41.6% were nulliparous and the mean age was 33.1 years (19–47 years). All women had internet access and only 3% did not own a smartphone. Women derived pregnancy-related nutritional information from a range of online resources, most commonly: What to Expect When You're Expecting (15.1%), Babycenter (12.9%), and Eumom (9.7%). However, 24.7% reported using Google searches. There was minimal use of publically funded or academically supported resources. The features women wanted in a web-based application were recipes (88%), exercise advice (71%), personalized dietary feedback (37%), social features (35%), videos (24%) and cooking demonstrations (23%).
Conclusions: This survey highlights the risk that pregnant women may get nutritional information from online resources which are not evidence-based. It also identifies features that women want from a web-based nutritional resource.

Introduction

Maternal nutrition during pregnancy influences the long-term health outcomes of both the woman and her offspring.[1,2] Suboptimal maternal nutrition may result in unfavourable neonatal outcomes, such as fetal growth restriction and neural tube defects. It may also increase the risk of long-term adverse metabolic profiles later in life.[3–6] Research has shown that women are not meeting intake recommendations for key micronutrients in pregnancy such as iron (12.5% compliance),

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vitamin D (0.3% compliance), iodine (50.5% compliance) and folate (2.1% compliance).[7] Furthermore, dietetic services and personnel to deliver dietetic advice are an increasingly constrained resource.[8] In 2014, the Coombe Women and Infants University Hospital (CWIUH) provided dietetic care to just over 25% of women attending the hospital, with many patients seen in group format as the hospital is limited to 1.0 whole-time equivalent (WTE) dietitian.[9]

Web-based technology is a widely accessible and cost effective means of disseminating information to large populations. A systematic review identified web-based technology as a safe and potentially efficacious dietetic tool in pregnancy, although this study cited the need for further supportive data in this area.[10] Studies have also reported high attrition rates which might compromise the overall utility of such tools, and which highlight the requirement to determine what features could improve user retention.[11] The increasing evidence supporting the importance of maternal diet in pregnancy, as well as the potential efficacy of web-based tools to deliver evidence-based dietetic interventions, suggest that research in this area is warranted.

Optimal methods of delivering evidence-based nutrition information which engages obstetric populations need to be defined. There is a lack of knowledge to date concerning the features of web-based applications which pregnant women find useful. Furthermore, what evidence-based information pregnant women find interesting and engaging also needs to be determined.

The purpose of this observational study was to examine the use of web-based nutritional information by women attending for prenatal care in a large academic maternity hospital in a developed country.

Methods

A self-administered, paper-based questionnaire was distributed to women attending for antenatal care after confirmation of a healthy, ongoing pregnancy at the CWIUH between June 2015 and August 2015. Women were recruited from booking and antenatal clinics at varying stages of gestation. The CWIUH accepts patients from all socioeconomic groups, and from across the urban-rural divide. It is one of the largest maternity hospitals in the European Union (EU). In 2014, the hospital delivered over 8,800 infants ≥500 g.[9] Informed consent was obtained from all participants. Women who did not understand English were excluded from the study.

The questionnaire was categorized into three sections. Section one contained questions relating to participant characteristics, including age, parity, health insurance cover, internet access and smartphone ownership.

Section two of the questionnaire collected information on women's use of web-based technologies and their preferences in this area. Questions and their response options were generated by clinical and research dietitians and adapted from previous surveys.[12,13] Participants were asked if they sought nutritional advice and if so, the sources they used. Respondents were given a multi-option list of ten possibilities, with the addition of a free text box to list additional options or state which specific resources they used.

In addition, data describing the features respondents would like in an online pregnancy nutrition tool were collected. A multi-option question with seven possibilities was provided, and a free text box to list additional features.

Participants were asked further questions concerning: i) their general use of downloadable pregnancy applications for mobile devices (apps), websites or fora; ii) their use of pregnancy apps, websites or fora to source nutritional advice and finally; iii) whether or not they would use an online resource for nutrition advice during their pregnancy. These questions were dichotomous 'Yes'/'No' options to determine participants' usage, followed by a free text box asking participants to provide further information. Factors which would prevent respondents from using an online pregnancy nutrition tool were also collected. A list of four possible options was available, with a free text box to list additional barriers.

Section three of the questionnaire collected information on socioeconomic status using questions derived from the EU Survey on Income and Living Conditions.[14] Relative income poverty status was determined by comparing equivalized household income against the 60% national median income threshold. Relative deprivation status was assessed by determining whether the respondents had experienced the enforced absence (due to financial constraint) of two or more basic necessities from a list of eleven over the past year. Respondents whose equivalized household income fell below the relative income poverty threshold, in addition to experiencing the enforced absence of two or more of the eleven basic markers of deprivation were deemed to be living in consistent poverty. Participants' level of formal educational attainment was also collected.

The study sample size was based on a previous survey-based cross-sectional observational study, using convenience recruitment. This study assessed internet use among pregnant women and calculated a required sample size of 100 women.[15] Data were analysed using IBM SPSS statistics version 22.0 (IBM Corporation, Armonk, New York). Any missing data were coded as missing before analysis. The included sample for each analysis is reported in the results table and is denoted in the footnote of the relevant table. Continuous variables were collapsed into categorical variables, including age (<30 vs ≥ 30 years) and parity (nulliparous vs multiparous) to differentiate preferences amongst older and younger mothers and between first and second time mothers, respectively.[15]

Descriptive statistics were used to describe participant characteristics and participant questionnaire responses. Differences in categorical variables between groups [age (<30 vs ≥30 years), parity (nulliparous vs multiparous), health insurance cover (public vs private) and educational level (<third level vs ≥third level)] were analysed using cross-tabulation with chi-squared tests for independence. Several binary logistic regression models analysing the association between women's demographic and socioeconomic status and the features they want in a web-based nutrition tool were performed. In all statistical analyses, a P value of <0.05 was considered statistically significant. This study received ethical approval from the CWIUH Research Ethics Committee and the Dublin Institute of Technology Research Ethics Committee.