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The internet: a reliable source for pregnancy and birth planning? A qualitative study

Catherine Lynch, Gergana Nikolova

ORIGINAL

Aims and objectives: The study aims to explore why and how pregnant women use the internet as a health information source, what overall effect it has on their decision making and how this is affecting their interaction with their health care professional.

Background: As the internet has become primarily a source of information among mothers-to-be, health care professionals require greater understanding of the impact of such technology to provide adequate support and advice to new mothers.

Selection criteria: Pregnant women, from the time of their first meeting with their midwife until birth, were approached for the study. Supplementary criteria included: age 18 and above, living within Frimley Heath Foundation Trust, and fluency in the English language.

Data collection and analysis: This was a primary research study with data collected through an online survey. As the purpose of the study was to collect data on an impact that cannot be directly observed, an online questionnaire was utilised to collect both qualitative and quantitative data. The data was analysed and presented thematically.

Results: In accordance with the UK government policy to promote registration of clinical studies and public access to research findings affecting health and social care, the research is registered on the public database.

Authors' conclusion: The use of the internet as a source of pregnancy-related information has become increasingly popular and influential among childbearing women. As health professionals, midwives have a responsibility to acknowledge the fact that women access the internet for support and pregnancy-related information. For the wider profession, midwifery leaders need to set the direction of travel for their profession in engaging with social media and provide guidance on directing pregnant women towards sources of information which are both evidence-based and valid.

Introduction

Pregnant women increasingly are turning to the internet for information during pregnancy (DH 2009, Lagan *et al* 2010, Kim *et al* 2011, Kraschnewski *et al* 2014). The worldwide social network exposes women to different unregulated sources of information and predicting the impact of potentially unreliable materials on maternal choices appears to be impossible. This paper addresses the extent and the degree of influence which online sources have on pregnant women's decision making practices. Potentially an understanding of why women turn to the internet could help in developing strategies and protocols to support both users and providers of maternity services.

Background and rationale for the study

Miller (2005) argued that although authoritative knowledge varies across geographical locations and indeed over time, it always forms 'acceptable' practices and constructs 'expectations'. Historically, authoritative knowledge of childbirth was passed from mother to daughter; however it appears that the internet has now become a significant source of information. Although the provision of pregnancy information on the internet can be seen to complement traditional sources, very little is known about the actual or potential impact of online sources of information on mothers' decisions (Lowe *et al* 2009, Cohen & Raymond 2011). This study aims to establish why, when and how pregnant women and



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their partners choose to use the internet as a health information source and the overall affect it has on their decisions and expectations.

Design

The study used a survey design, collecting qualitative data. As a non-experimental, descriptive research method, a survey has been identified as the most effective approach for a study which aims to gain insights and discover meanings on phenomena that cannot be directly observed (Busha & Stephen 1980).

Homogenous sampling was used as part of a purposive sampling technique, where potential participants were approached based on certain characteristics and traits. Inclusion criteria were set as women between 18 and 44 years old, who were fluent in English and lived within the Frimley Health NHS Foundation Trust in the south of England. This sample represents approximately 1% of all estimated births in the elected hospitals — approximately 4550 deliveries per annum.

Procedure

Full ethical approval was granted prior to commencing the study. Details of the research, the questionnaire, additional paperwork and the recruitment procedure were then presented to the recruiting midwives to ensure that they had the appropriate knowledge and understanding of the study prior to approaching potential participants.

Forty emails were sent to women who had indicated a willingness to participate in the survey during a consultation with their midwife, 30 responded, generating a 75% response rate. Those who responded were then invited to take part in the survey online, using Survey Monkey. The data were initially summarised and analysed to provide a detailed understanding of the participants, classifying them into different age groups, religion, number of pregnancies and marital status. The data were further analysed to identify emerging themes, giving the opportunity to compare these to the earlier findings of an extensive literature review (Nikolova & Lynch 2015).

Survey findings

An understanding of the nature of the participants in the study is required to draw inferences and conclusions and to enable the findings to be generalisable to the wider population (Table 1). The great majority of women (90%) were married or co-habiting (n=27) and one mother, who accounted for 3.33%, identified herself as a 'single parent'. All of the participants identified their internet skills as either 'intermediate' or 'expert' (n=30). All of the participants had access to the internet at home, or at work or through mobile connection. Sixteen point six per cent (n=5) of the women were educated to postgraduate level and almost half had been educated to degree level (46.6%, n= 14).

Table 1. Demographic of study participants

Socio-demographic characteristics of the sample	Number (n=30)	%
Religion		
Protestantism	1	3.57%
Catholicism	3	10.71%
Christianity	8	32.14%
Islam	8	32.14%
Sikhism	3	10.71%
Non-denominational	1	3.57%
No religion	2	7.14%
Ethnicity		
White British	10	36.67%
White Irish	1	3.33%
White other	7	23.33%
Other mixed	1	3.33%
Indian	3	10.00%
Pakistani	8	26.67%
Employment		
Student	3	10.00%
Full-time	12	40.00%
Part-time	2	6.67%
Unemployed	1	3.33%
Housewife	13	43.33%

Most of the participants had planned their pregnancy (83%, n=25). For 50% (n=15) of the women it was their first pregnancy, for 22% (n=7) it was their second pregnancy and 28% (n=8) stated that they had had two or more previous pregnancies. Ninety-seven per cent of the women described their pregnancy as 'normal' with no complications. The majority of mothers who already had children (76%, n=11) stated that they had had a full term labour, 50% (n=7) had had a miscarriage and 14% (n=2) had had a termination.

The study concentrated on assessing the impact of the internet on maternal choice and decision making processes during pregnancy, therefore the survey sought opinion on three key areas:

- Access and use of information collected from the internet
- Evaluation of that information by the women who used it
- The effect of the internet on the pregnant woman's decision making.

Access and use of information

More than half of the women (68%, n=19) had searched for information on the internet before their first visit to a health care professional and 90% of them (n=26) identified a preference for finding information on their own. Eighty-six per cent of women (n=25) used general search engines (Google or Yahoo) to search for information. Only 10% (n=3) accessed sites run by health care professionals. The participants were asked why they used the internet. Almost 50% (n=14) of the women gave their main

reason as the variety of information available, while the speed of access was the most important factor for 46% (n=13) of the study population. In an open-ended question, the participants were asked to identify which topics they most searched for and seven key categories were identified (Table 2).

Table 2. Most commonly searched topics

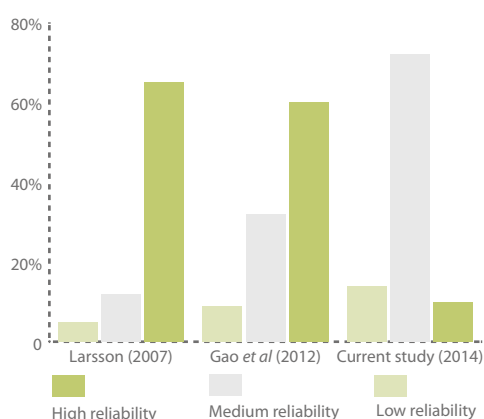
Categories and sub-categories	Number (n=23)	%
Foetal development		
Growth restriction and week by week development	15	65.21%
Ultrasound	2	6.90%
Twin pregnancy	1	4.34%
Baby movements	6	26.09%
Nutrition		
Weight control	4	17.39%
Diet	2	8.69%
Additional information regarding pregnancy		
Symptoms of pregnancy	4	17.39%
Vaccinations	3	13.04%
Schedule for antenatal appointments	2	8.69%
Symptoms of labour	15	65.21%
Birth plan	15	65.21%
Hospital reviews as well as staff competence	9	39.13%
Additional information regarding labour		
Pain relieve during labour	11	47.80%
Caesarean section	7	43.40%
Foetal presentation	12	52.17%
Newborn		
Breastfeeding	10	43.47%
Baby names	2	8.69%
Newborn skin care	2	8.69%
Risks during pregnancy		
Medication during pregnancy	2	8.69%
Sign of miscarriage	2	8.69%
Back pain and muscular pain	2	8.69%
Exercise	2	8.69%
Other additional information	19	8.69%

A series of questions within the questionnaire were devoted to identifying how often and how easily the participants were retrieving information from the internet. Considering that in a previous question it was established that 100% (n=30) of the mothers had access to the internet, it was not a surprise that 93.3% (n=28) stated that it was 'very easy' or 'relatively easy' to find the information about the topics they were looking for. Although 75% (n=22) of the respondents stated that they never connected with other pregnant women through online forums or taken part in chat rooms or support groups, 55% (n=15) had consulted a website following recommendations from friends and as many as 73% (n=21) were happy to recommend sources they found valuable to a friend.

Evaluation of information

In the absence of validated and reliable quality-rating tools to assess the standard of the health care information provided on the internet, and because the study was focused on the influence of the information rather than the validity of the information, a variety of studies and different tools were considered (Rees *et al* 2002, Hanif *et al* 2009, Muthukumarasamy *et al* 2012, Kaicker *et al* 2013) but the participants were encouraged to use their own criteria to assess the quality of the information they were accessing. Eighty-three per cent ($n=24$) of the women rated the quality of the information from the internet 'excellent' or 'good' and said that they did check the provider of the information. Almost 45% ($n=13$) believed most of the information and all of them (100%, $n=29$) defined the information as 'useful' or 'reasonably useful' (Figure 1).

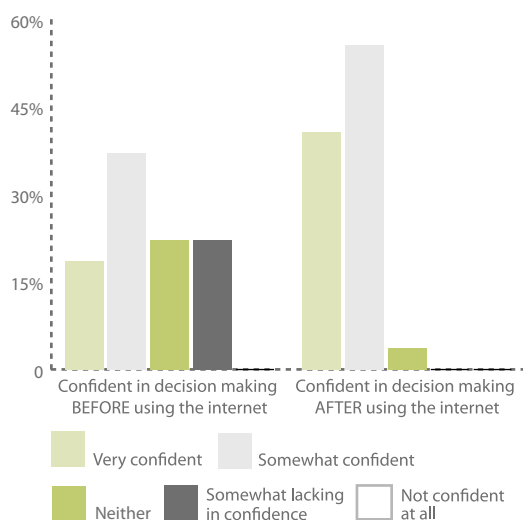
Figure 1. Perceived reliability



Effect on decision making

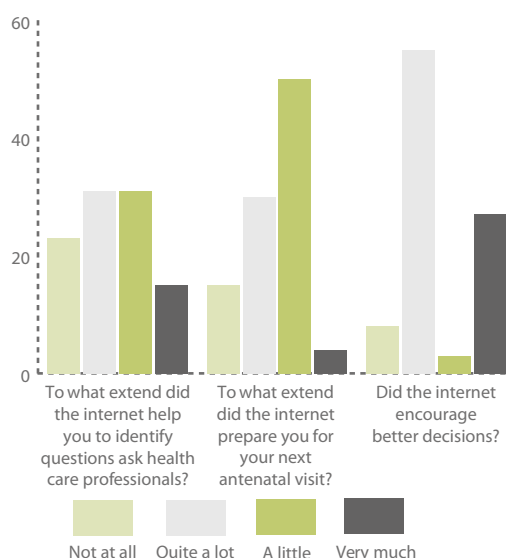
The study also looked at the extent to which the internet influenced maternal decision making. The most significant finding was the increase in confidence (Figure 2) where 50% ($n=13$) reported that the information retrieved from the internet did influence their decisions regarding pregnancy and birth management.

Figure 2. Confidence in decision making



Overall 76% ($n=23$) of the mothers who participated in the study said they believed they made better decisions after using the internet. They also used the internet to identify questions to ask their health care professional and to prepare themselves for the follow-up visits with their health care provider (Figure 3).

Figure 3. The role and the influence of the internet on the relationship between mothers and health care professionals



However, more than half of the women (55.38%, $n=17$) preferred to share the information only with family members rather than with their health care professionals, although 33.33% ($n=9$) agreed that the follow-up visit was influenced by information obtained from the internet prior to the appointment.

Discussion

The findings from this study support other findings in the literature (Lagan *et al* 2011a, McKenna & McLelland 2011, Gao *et al* 2012, Lima-Pereira *et al* 2012) which show an increase in the use of the internet by pregnant women for information and advice to provide them essentially with the knowledge they need to make decisions about their pregnancy. The outcomes from the study, although undertaken in a small rural area within the UK, correspond directly with the results from global online international studies reported in the literature review undertaken prior to this study (Nikolova & Lynch 2015) which demonstrate that the internet is becoming the first source of information for pregnant women worldwide, with Google and Yahoo being the most predominantly searched websites rather than government or local health services' sites.

Overall, the findings from the study highlighted the speed the internet is gaining in providing and communicating information to mothers. Although the survey targeted and assessed women's experiences, it is clear that the information mothers are accessing will have a proportional effect on partners as well (Lima-Pereira *et al* 2012). It also has to be considered

that the internet provides unlimited platforms where health-related information, which may or may not be evidence-based, could be used to change mother's behaviour in very important aspects of their everyday lives (Colineau & Paris 2010, Setoyama *et al* 2011, Moorhead *et al* 2013).

The findings of this study clearly indicate a shift in the approach of newly pregnant women in the ways in which they access and understand information, not only in the early stages of pregnancy but throughout their entire period of gestation. It is somewhat concerning that the internet is now the first choice for information for the vast majority of the participants in this study. The unregulated nature of many midwifery information websites creates potential for misinformation and confusion, with many mothers potentially lacking the skills to determine the reliability of the information they are retrieving. Conversely, the results show that between 2007 and 2014 the percentage of mothers rating the information on the internet as 'highly reliable' has dropped significantly in favour of those who rate the information as that of 'medium reliability'. It is difficult to conclude whether women are more confident in assessing the information they are coming across or they are more aware of different quality indicators but it is evident that more women are considering the source of the information when they are searching for or using information from the internet.

Also of concern is the finding that pregnant women are accessing the internet for advice and guidance prior to their first appointment with their health care professional. This first meeting is very significant, both for building relationships which will continue for the duration of the pregnancy and for the assessment opportunities which it offers. There is a risk that this first contact may be delayed if women see the internet as a panacea to all their questions and information needs, and subsequently see less value in making early contact with the midwife.

Decision making has long been both an exciting and daunting key feature of early pregnancy, with prospective mothers and their partners debating where the baby will be born, what type of birth they would like, what life changes they may make and how they will adjust to the arrival of a new baby. Traditionally, those decisions have been supported in two ways: with family support and with support from the midwife. This study clearly shows that where family support is in place, pregnant women are less affected by the information retrieved from the internet than participants reporting 'living away from parents'. Away from family, support for the newly pregnant woman has traditionally devolved to her midwife, from first point of contact all the way to delivery, but this study suggests that this too is at risk, with most of the mothers accessing online

information and starting their decision making process before meeting with their midwife.

A number of authors suggest that the use of electronic media to seek health care related information began to rise rapidly in the mid-1990s (McCartney 2000, Diaz *et al* 2002, Hildingsson & Rådestad 2005, Gao *et al* 2012). Since that time the internet has had an increasingly significant impact on prospective mothers' expectations of maternity services and on the culture of maternity care as a whole. From this study, there is no doubt that the midwifery profession needs to be aware of the potential risks and complications which could emerge from an overdependence by pregnant women on information from the internet.

Limitations

It is acknowledged that one of the biggest limitations of this study is the fact that mothers-to-be under 18 years of age were excluded from the survey. Therefore the conclusions drawn from the study will not represent the opinion of the youngest generation of mothers using the internet. The recruitment method appeared to be another significant limitation, as the process depended on the willingness of the recruiting midwife to approach particular women (Taylor *et al* 2010, Morton *et al* 2012). The length of the survey could also be considered as a limitation as it was observed that participants who spent more than 20 minutes on the questionnaire did not complete the survey.

Relevance to clinical practice and recommendations

Social media and technology, particularly the internet, have the potential to dramatically change the ways in which pregnant women access information about maternity care and services (Diaz *et al* 2002, DH 2009, Greene *et al* 2011, Greaves *et al* 2012, Rozenblum & Bates 2013). Based on the findings of this study, it is clear that there is a national need for guidance from the midwifery professional bodies as to which websites they would endorse as providers of reliable and valid information. This could be in the form of an app, signposting women to websites where they could be reassured the information they were sourcing was aligned to the type and quality of information they would get from their health care professional. A further approach midwifery and related health care bodies could consider is a web-based bulletin, a monthly or bi-monthly newsletter, which would focus on issues identified in the wider press during the preceding period, with a professional perspective and links to evidence to support that opinion. To protect the unique relationship that the pregnant woman has with her midwife, it is imperative that midwives themselves engage with social media, in order to keep in line with the NHS strategy for embracing technology (NHS England

2013) and to align communication and access to information approaches to those of their service users. Individual midwives doing this on an *ad hoc* basis will not suffice; there needs to be a clear strategy with strong leadership and direction provided from the leaders of the profession so good practice can then be disseminated and replicated at the interface with the client. Further exploratory research is needed to determine the best way forward to meet these challenges.

Conclusion

The use of the internet as a source of pregnancy-related information is becoming increasingly popular among childbearing women (Declercq *et al* 2007, Larsson 2009, Johansson *et al* 2010, Lagan *et al* 2010, Lagan *et al* 2011a, 2011b, Gao *et al* 2012) especially with the limited antenatal appointments and professional support offered at the beginning of pregnancy (NICE 2008, Lima-Pereira *et al* 2012). The frequency of internet searches has increased significantly over the last ten years due to the fact that access is easy, cheap and convenient. The study established that women feel confident to search and use the information they found on the internet. During the data analysis, it became obvious that the effect of online information does not always have a positive or supportive effect on mothers. It became apparent that guidelines are needed to empower women's ability to appropriately evaluate and categorise the information available online. The main conclusion from this research is that the internet not only provides an opportunity for mothers to search and access different information but it is also becoming a significant factor in their choices and decisions. Furthermore the study confirms, in conjunction with the literature review, that the information retrieved from the internet, as well as influencing mothers' decisions, also frames their expectations with regard to the management of their pregnancy and labour.

This article follows on from the authors' previous paper that appeared in the March issue of the Digest and discussed mothers' use of the internet and whether related information affected their decision making.

MIDIRS regrets the previous omission of author Catherine Lynch's details given below.

Catherine Lynch, Senior Lecturer, Course leader for the MSc Advanced Practice, University of West London.

Gergana Nikolova, Senior Midwife, Frimley Park NHS Foundation Trust.

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