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Research on Parenthood and the Internet: Themes and Trends

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Abstract

The purpose of this study was to review articles about parenthood and the internet published in the medical, educational, and social sciences. The aim was to identify themes and trends in the available literature. A building block strategy was designed and used to achieve a high recall rate. By searching PubMed, ERIC, PsycINFO, Sociological Abstracts, and Social Services Abstracts, 484 articles were retrieved. Inclusion and exclusion criteria were set to identify relevant articles. A sample comprising 94 articles was considered relevant in relation to the topic. We found that since the field of research was opened in 1997, there has been an increased interest for the topic from a variety of academic disciplines in various countries. Four themes were found in the body of literature: web site analysis, user patterns, online support groups, and interventions. In the first years, researchers were occupied with listing useful web sites for parents and analyzed them regarding quality and accuracy. After that a clearer focus on parents' online user patterns emerged, followed by an interest for online support groups. More recently, there has been an increase in using the internet for various interventions.

Key words: internet, parenthood, literature review

Introduction

Since the internet became available to the public in the mid 1990s, the numbers of users have grown exponentially each year from approximately 16 millions in December 1995 to 1,319 millions in December 2007. This accounts for 20% of the world population (www.internetworldstats.com). The internet is used for a variety of purposes, for example communication, information seeking, business, and pleasure. It is well known that the internet is used to promote and find health information, either for oneself or for significant others such as spouses, parents, or children (Cotten & Gupta, 2004; Sarkadi & Bremberg, 2004). It is also known that the internet is used to share health information and, thus, we may perceive it as health information exchanges (Bylund, 2005; O'Connor & Madge, 2004). Information can be exchanged in various forms and arenas, for example online counselling and online support groups via web sites/web communities/web chat rooms. Those providing the information online may be professionals within a given field of expertise, commercial actors, NGOs, or peers.

A lot of the health information online is designed for and directed to parents or expectant parents as they are well known consumers of health information (Nystrom & Öhring, 2006). Some of the information is offered through specific websites for certain health conditions but much of the information is also to be found on, or linked to, so called parent web sites. The number of these web sites has grown dramatically during the last years and they offer parents, not only paediatric health information, but also to shop commercial products, socialize in chat rooms and explore a wide range of topics on children, health and parenthood (Carter, 2007). There is no doubt, according to the web sites' own figures, that these sites are very well visited and yet other figures point in the same direction. For example, a search marketing study from the online network company Yahoo shows that 86% of new parents-to-be use the internet to search about information on pregnancy (Yahoo, 2005). At the same time many parents of today are offered different interventions by professionals through the internet; parent education programmes, family life education, support groups etcetera. Thus we can conclude that parenthood and the internet is an area of rapid development where a lot of research questions emerge. But what do we actually know about the research on this relatively newly emerged topic?

Trawling through books and articles on the topic, there are a few literature reviews to be found that summarize the contemporary knowledge about parenthood and the internet, but all too often these reviews focus on specific aspects of parenthood and the internet, for example parents of emotionally disturbed children and online social support (see Scharer, 2005). To the best of our knowledge, no studies have systematically analysed the field of research and its characteristics. For example, what questions or scientific perspectives have dominated the field of parenthood and the internet and what themes and trends can be discerned over time? Which methods have been used in the studies? The overall purpose of this study was to identify and analyse journal articles about parenthood and the internet published in the medical, educational, and social sciences. More specifically, the purpose was to identify the number of published articles, year of publication, geographic origin, and academic discipline. Furthermore, the purpose was to identify themes and trends in the research of parenthood and the internet regarding content and methods.

Method

Traditionally, in qualitative literature reviews detailed methods chapters are rare. However, we believe that to be able to put any literature review (or meta analysis) in context, one has to know how the included literature was found on which the analysis was based. The search strategy in this study was designed to include all articles on parenthood and the internet published in the medical, educational, and social sciences (i.e., to achieve high recall). In collaboration with librarians at Malmö University, five databases were considered relevant for this topic. These were PubMed, ERIC, PsycINFO, Sociological Abstracts, and Social Services Abstracts (all but PubMed accessed via the CSA platform). Other databases, for example Social Sciences Citation Index and Academic Search Elite, were considered too general for the scope of this study. In addition Social Science Citation Index does not use descriptors or controlled terms which restrict the use of a building block strategy.

The databases were searched from inception until September 14, 2007, and the search was limited to human subjects, English and abstracts in PubMed and to peer-reviewed articles in English in CSA.

The search strategy was to build two blocks that would include terms (descriptors/MeSH terms) related to the internet and parenthood respectively and to combine the two blocks to capture the most relevant articles (Marchionini, 1995). In PubMed, the terms were determined by consulting the MeSH database and in CSA-databases by terms from the indexing thesauruses. Consequently, database specific terms were used in all our searches.

We included all terms that were related to parenthood in each database to build the first block (Block 1). Then we repeated this step for terms related to the internet to build the second block (Block 2). To ensure that no sub terms were overlooked, we exploded our search terms. To explode the search terms means that search terms listed below those already chosen in the hierarchy are also included. The third block (Block 3) was simply a combination of all parenthood related terms and all internet related terms. Consequently, at least one term in the first block had to be matched with at least one term in the second block for an article to be considered relevant in this search. In each block the terms were combined by using the Boolean logic. In the first and the second blocks terms were separated by OR and in the third block by AND. The full search strategies for each database are presented in Table 1.

Table 1: Terms used in search strategy for the five databases

Database	Block 1 ^c	Block 2 ^c	Block 3
PubMed ^a	#1: Child Rearing [MeSH] #2: Adoption [MeSH] #3: Pregnancy [MeSH] #4: Parents [MeSH] #5: Single-Parent Family [MeSH] #6: Parent-Child Relations [MeSH] #7: Parental Leave [MeSH]	#1: Internet [MeSH] #2: Therapy, Computer-Assisted [MeSH] #3: Attitude to Computers #4: Computer-Assisted Instruction [MeSH]	#1: Block 1 AND Block 2
ERIC ^b	#1: child rearing #2: early parenthood #3: infant care #4: one parent family #5: parent aspiration #6: parent associations #7: parent attitudes #8: parent background #9: parent caregiver relationship #10: parent child relationship #11: parent conferences #12: parent counseling #13: parent education #14: parent empowerment #15: parent grievances #16: parent influence #17: parent materials #18: parent participation #19: parent responsibility #20: parent rights #21: parent role #22: parenthood education #23: parenting skills #24: parents #25: pregnancy	#1: computer mediated communication #2: computer uses in education #3: internet #4: online courses #5: online searching #6: online vendors #7: world wide web	#1: Block 1 AND Block 2
PsycINFO ^b	#1: birth #2: childbirth training #3: parent child relations #4: parent training #5: parental absence #6: parental characteristics #7: parental investment #8: parental involvement #9: parenthood status #10: parents #11: pregnancy	#1: internet #2: computer mediated communication #3: computer searching #4: online therapy	#1: Block 1 AND Block 2
Sociological Abstracts ^b	#1: parents #2: childrearing practices #3: parent child relations #4: parental attitudes #5: birth #6: parent training #7: parental influence #8: parenthood	#1: computer mediated communication #2: internet	#1: Block 1 AND Block 2

	#9: pregnancy		
Social Services Abstracts ^b	#1: birth #2: childrearing practices #3: parent child relations #4: parent training #5: parental attitudes #6: parental influence #7: parenthood	#1: computer mediated communication #2: internet	#1: Block 1 AND Block 2

(a) MeSH terms (b) Descriptors (c) OR between the terms in each block

Inclusion and exclusion criteria

All of the matching references from the literature search were analyzed by the researchers to assess their relevance according to the topic parenthood and the internet. Based on abstracts the researchers included or excluded the references and those included were stored using a reference database software (RefWorks) and were later retrieved in full text. In unclear cases, the researchers conferred and a joint decision of inclusion or exclusion was made for each article. However, this was rarely necessary.

The criteria for inclusion were that the articles had to be in English and peer-reviewed or, in the case of PubMed have an abstract. They also had to focus on parenthood and the internet. We defined parenthood and the internet as when parents use the internet to seek support and information about pregnancy, babies/children and parenthood. In addition, our definition also included professionals using the internet to reach parents or expecting parents with information on websites or direct interventions such as on line counselling, support groups in web chat rooms or educational programmes.

The criteria for exclusion were if the references were editorials or not focusing on our above mentioned definition of parenthood and the internet. These studies could, in turn, be divided into five sub-categories. The first category of studies concerned *new ways of communication between the health care and different groups of professionals*, for example: new ways of training midwives, nurses and junior doctors by using the internet, multimedia or different forms of electronic equipment. In addition, these studies focused on improvement of maternity records and patient records. The second prominent part of the excluded empirical studies concerned very *specific medical research studies*. These studies focused on testing of different computer systems or other medical equipment/material as infusion pumps or implants. It also concerned internet surveys on certain patient groups as women with asthma or persons with hepatitis B, infectious disorders, HIV etcetera. The third category comprised articles that focused on the use of the internet/computers for *educational purposes*. These studies investigated the possibility to improve literacy among children, to provide education at home, and to improve various other school subjects. The fourth category of excluded articles in fell into the category of *family-children oriented articles* with subjects beyond our scope such as socio-demographic descriptions or analyzes of internet or computer use, how to protect children/youths online, and media violence. Finally, the fifth category comprised very disparate studies ranging from development of car seat safety and information to cruise-line passengers to the choice college and career.

Largely, the content of the excluded articles mirrored the primary focus of the databases (i.e., the medical articles came from PubMed, the educational articles came from ERIC, and the family-child oriented articles came from PsycINFO, Sociological Abstracts, and Social Services Abstracts).

Results

The database searches yielded a total of 484 articles, the vast majority were found in PubMed. Of these articles, 109 articles were included by the researchers as relevant to the topic of parenthood and internet. Again, the majority of the articles were sourced from PubMed. However, we found that 15 articles were indexed in multiple databases, thus the actual number of relevant articles was lower, 94 articles in all (Table 2).

Table 2: Number and nature of indexed articles in the databases (frequencies)

	PubMed	ERIC	Psyc-INFO	Socio-logical Abstracts	Social Services Abstracts	Total
Number of articles	298	82	85	13	6	484
Number of selected articles	62	9	28	5	5	109
Overlaps	11	1	3	-	-	15
Total number of articles	51	8	25	5	5	94
Publication year (Range)	1999-2007	1997-2006	2001-2007	2001-2006	1998-2003	1997-2007
Continent						
North America	30	5	18	2	5	60
Europe	14	3	6	3	-	26

Asia/Australia	7	-	1	-	-	8
Discipline						
Medicine	35	1	10	-	-	46
Social Sciences	4	4	10	4	5	27
Health	5	-	2	-	-	7
Other	7	3	3	1	-	14
Methods						
Qualitative	19	5	10	4	1	39
Quantitative	21	1	8	-	2	32
Mixed	-	-	1	-	-	1
Review	4	1	2	-	1	8
Other	7	1	4	1	1	14

The first article on parenthood and internet was published in 1997 and during the following 6 years (1997-2002) a total of 19 articles were published. In the next two years (2003-2004), the number of published articles increased and 25 articles were added to the body of literature. In 2005 alone another 26 articles were published. Compared to 2005, the number of published articles slightly decreased and 18 articles were published in 2006 and 6 in 2007.

During the first 7 years (1997-2003) the research on parenthood and the internet emanated from North America, particularly the US. In the rare cases where the research came from outside North America, it came, with one exception (Australia) from the UK. In 2004, there was a significant increase in non-North American research, but still the majority of articles came from the US. In 2005 the heavy US bias in the research started to even out and besides research from the UK, studies from Sweden, Finland, the Netherlands, Germany and Korea also contributed to the body of knowledge. In 2006 there was a shift and the majority of the research this year came from other countries than the US. In Europe, Belgium was added to the list and in Asia, Taiwan. So far in 2007, there are as many studies from the US as from Europe including Israel.

Most articles from our database search were published in the medical field followed by the social sciences (46 vs. 27), and despite a bias towards more articles indexed in PubMed between 1997 and 2003 compared to the other databases, this has evened out from 2004 and onwards. Of the articles included in our search, the majority were based upon empirical studies that had used qualitative and quantitative approaches to an almost equal extent.

In our analysis of the content of the articles, we could discern 4 major themes. We labelled them: web site analysis, user patterns, online support groups, and interventions. Occasionally, one article could be said to belong to two or more themes.

The first major theme throughout the first years of research concerned description and listings useful web sites for parents, but also to analyse them regarding their quality and accuracy (e.g., Anderson & Anderson, 1997; Dolev & Zeedyk, 2006; Johnson, 2001; Oermann, Gerich, Ostosh, Zaleski, 2003; Rees, 2002; Sankar, 2000). The majority of the research with this focus was conducted before 2005, but this theme has recurred occasionally in subsequent years.

The researchers noticed that there was an abundance of information to be found online, that it differed in content, and sometimes was both misleading and contradictory. Generally they pointed to the need for professionals to be able to help parents to accurate and high quality web sites and some suggested that academic based web sites should be encouraged (e.g., Aslam, Bowyer, Wainwright, Theologis, & Benson, 2004; Carter, 2007; Hardwick & MacKenzie, 2003; Martland & Rothbaum, 2006; McCartney, 2004; Oermann, Lowery, & Thornley, 2003; Okino & Yamamoto, 2004). In addition, some also pointed out that web sites seemed to be medically oriented but lacked the social or emotional content that comes with certain medical diagnoses (Himmel, Meyer, Kochen, & Michelmann, 2005; Zaidman-Zait & Jamieson, 2004).

Most studies within this theme individually investigated 10-30 websites and assessed the quality of the information found on these. The selection of websites often focused on specific diseases and the retrieved information was compared to governmental and organizational guidelines. Similar parameters were often set for assessing quality and there were little diversity among the studies in this regard.

The second theme found in the literature was relating to user patterns. In 2000, the first study about parents' user patterns was published and the aim for this and subsequent studies were to investigate how parents accessed health and parenting information on the world wide web and what they searched for (e.g., Bernhardt & Felter, 2004; Brazy, Anderson, Becker, & Becker, 2001; Cohall, Cohall, Dye, Dini, & Vaughan, 2004; Herman, Mock, Blackwell, & Hulseley, 2005; Massin, Montesanti, & Gerard, 2006; Nettleton, Burrows, O'Malley, & Watt, 2004; Sim, Kitteringham, Spitz, Pierro, Kiely, Drake, & Curry, 2007; Tuffrey & Finlay, 2002; Wainstein, Sterling-Levis, Baker, Taitz, & Brydon, 2006). Most research within this theme confirmed the notion of previous research that many parents used the internet to search for information and suggested that most parents considered it to be a positive resource.

Within the second theme, quantitative studies dominated, but qualitative studies comprising individual interviews and

focus group interviews were also found. In general, these studies focused on specific patient groups and comprised relatively small samples. Mostly, the studies were conducted in offline settings.

The third theme identified was online support groups. Most of the articles with this focus were published in 2002 and after. Online support groups, as described in the literature, referred to web communities, web chat rooms, and e-mail list serves where parents interacted with each other and occasionally with professionals. Mostly, these groups/communities were created or initiated by professionals as parts of interventions. Often they were directed to specific groups, for example young single mothers and adolescent mothers (Dunham, Hurshman, Litwin, Gusella, Ellsworth, & Dodd, 1998; Hudson, Elek, Westfall, Grabau, & Fleck, 1999), pregnant women on home bed rest (Adler & Zarchin, 2002), lesbian mothers (Lev, Dean, DeFilippis, Evernham, McLaughlin, & Phillips, 2005), fathers (Nicholas, McNeill, Montgomery, Stapleford, & McClure, 2003), and parents of emotionally disturbed children (Scharer, 2005). Generally, parents claimed that they received positive support in these online gatherings and that they received useful advices (Baum, 2004; Capitulo, 2004; Drentea & Moren-Cross, 2005; Gribble, 2001; Leonard, Slack-Smith, Phillips, Richardson, D'Orsogna, & Mulroy, 2004; Nyström & Öhring, 2006). They emphasized the anonymity online to be an important factor to be able to express themselves in comfortable ways (Valaitis & Sword, 2005). In general, researchers agreed that participating in support groups or communities had positive outcomes for parents. Furthermore, by participating in online support groups, professionals could benefit from instant feedback from clients that could improve maternity care (Kouri, Turunen, Tossavainen, & Saarikoski, 2006). At the same time, however, some online support groups reproduced traditional stereotypes which made the internet both liberating and constraining at the same time (Madge & O'Connor, 2006).

The above mentioned studies constituting the third theme were all conducted online. In contrast to the studies in the previous themes, these were often qualitative studies that aimed to explore and analyze the content in various online groups and online diaries. The techniques used for data collection ranged from participant observation to questionnaires. However, the quantitative studies were recognized as small comprising samples of less than 100 respondents. Although the studies varied in scope there was a particularly strong focus on mothers.

The fourth major theme concerned interventions. Almost as soon the field of research was opened, studies focused on the use of the internet to provide various health related information to parents (e.g., Bae & Heitkemper, 2006; Blake, 2006; Downing, Whitehead, Terre, & Calkins, 1999; Goldman, Antoon, Tait, Zimmer, Viegas, & Mounstephen, 2005; Hsieh & Brennan, 2005; Szwajcer, Hiddink, Koelen, & van Woerkum, 2005; Zipper, Broughton, & Behar, 2000), but also delivering training and educational programs via the internet as parts of interventions initiated by or conducted in close relation to health care professionals (e.g., Brown, Winzelberg, Abascal, & Taylor, 2004; Buzhardt & Heitzman-Powell, 2006; Glang, McLaughlin, & Schroeder, 2007; Kattwinkel, Cook, Nowacek, Bailey, Crosby, Hurt, & Short, 2004; Wang, Chung, Sung, & Wu, 2006; Wilson, 2003). This type of research about the use of the internet for various interventions increased significantly in 2005. In most articles the researchers reported positive outcomes of the interventions. The internet was perceived as a cost effective, accessible, fast, and convenient way to reach many parents (Mankuta, Vinker, Shapira, Laufer, & Shveiky, 2007; Roberto, Zimmerman, Carlyle, & Abner, 2007). Online interventions and online resources were not only considered to be beneficial for parents, but for health care professionals as well (Blake, 2006; Card & Kuhn, 2006; Kildea et al., 2006; Kouri, Turunen, & Palomäki, 2005).

Methodologically, studies within the fourth theme were either literature reviews or had an experimental design. The literature reviews focused on how the internet could be used for various interventions whereas the experimental designs, both qualitative and quantitative, were used to evaluate interventions by pre-test/post-test or post-test only experiments. Occasionally, the article described the entire process from the development of the intervention to the results of the evaluation. The studies comprised both randomized and non-randomized samples occasionally including a control group. Generally the samples were relatively small.

Besides these major themes, there were a number of articles, around 10 percent, that focused on other topics such as methodology (Beck, 2005; O'Connor & Madge, 2001), narratives published online by parents (Bylund, 2005; Christian, 2005; Fleischmann, 2004; Fleischmann, 2005; Ley, 2007), or available online resources for parents (Geller, Psaros, & Kerns, 2006).

Discussion

The field of parenthood and the internet was established in 1997 and since then it has increased in volume as well as both geographic and disciplinary origin. In the current study, a total of 94 articles were found to constitute the body of knowledge about parenthood and the internet. Many of the articles described empirical studies, qualitative and quantitative to an almost equal extent. These often included small samples, occasionally clinical, with the character of being pilot studies.

In our analysis of the articles, we could identify 4 major themes: web site analysis, user patterns, online support groups, and interventions. These themes were established almost as soon as the field of research was opened in 1997 but have vacillated over time. The first years of research were generally occupied with listing useful web sites for parents, but also to analyse them regarding their quality and accuracy. After that a clearer focus on parents' user patterns online emerged followed by an interest for the activities in online support groups. More recently an interest for the use of the internet for various interventions on internet has dominated the research.

However, while the majority of the articles could be grouped by these themes, a closer look within each theme showed that the articles varied greatly in focus. Some focused on very specific groups of parents such as pregnant women, young mothers, lesbian mothers, step mothers, breast feeding mothers, fathers and so forth while others focused on parents of children with special needs/disabilities such as parents of children with autism, club foot, Traumatic Brain Injury and so forth. Simultaneously, the focus has often been on the parent-professional relation and less often on parent-parent relations.

So far, the research in the field has concluded that parents use the internet in their parenthood. They use the internet for a variety of reasons and purposes ranging from general questions about pregnancy to more specific questions about children with special needs or diagnoses. Research has also noted the social support parents provide and receive online and the impact and consequences this has on parents in their every day life. In general, prior research holds the internet to be an important tool with great potential for professionals working with parents, e.g., doctors, nurses, and midwives. Furthermore, parents and professionals in the majority of the articles in this study reported positive experiences of using the internet for these purposes. The internet has constituted an alternative to more traditional ways of communication around issues of parenthood.

Economic factors were often emphasized in the articles as one of the benefits of using the internet. Furthermore, some researchers mentioned the time-efficiency and the possibility to reach geographically distant locations. At the same time, they suggest that it is of utmost importance that professionals learn the technique so they can make the most of it in their own work, but also to be able to assist patients/parents.

Despite the generally positive views on parenthood and the internet, some downsides were noted in the articles as well. Primarily in the studies that analyzed web sites, there were some worries concerning the accuracy and quality of the information found online as parts of it was contradictory misleading. Some researchers suggested parents to be too positive and, thus, less critical. This critique was mostly confined to the earliest years of research and seemed to have decreased since then. Another negative concern for researchers was what has been known as the digital divide (differences in information technology access between people based on, for example, socio-demographic factors) and that this should be considered in decisions about utilizing the internet in professional settings.

In the articles analysed in the current study, there was a lack of research that focused on how parents use the internet in their parenthood in general. Today, new online communities have been established, not for any other reason than spots for parents to socialize and share practical advices. What does this mean for parents of today? We have also seen the birth of weblogs which can be described as an online diary for anyone to read. There are plenty of weblogs about parenthood and parenting. How do parents use the internet to communicate with family and friends? What kind of online information do parents seek in general? Does it differ from what they seek offline? These are examples of questions that we do not know anything about and we suggest that future research on parenthood and the internet broaden their focus to include "regular" parents in non-clinical everyday settings. In addition, the majority of the studies focused on mothers and we suggest future research to include the father as well.

Methodologically, the analysis showed that the results of the studies were based on cross sectional and experimental designs based on relatively small samples. Although we consider the studies to be of high quality and well conducted, there are problems associated with sample size as well as the cross sectional design. While the studies are very valuable as pilot studies, we suggest future research to aim for larger samples and longitudinal designs or repeated measurements to increase precision. Replications of prior studies could be an option to increase precision as well. Furthermore, the data collection techniques used in the studies, were rather streamlined within each theme. We believe that this could be a weakness as different approaches produce different types of data and conclusions. Hence, more methodological variations, or mixed method approaches, could help us to more fully understand the phenomena in question.

Finally, regarding our literature search, this study emphasized the importance of conducting multi-database searches, not least because of the relatively low number of overlapping articles. In addition, it was concluded that using only parenthood and internet as search terms is not enough to find all relevant articles in the field. Because we aimed to achieve high recall, our literature search was less precise, which is evident by the fact that only around 20 percent of the articles were considered relevant (94 of 484). On the other hand, the aim for high recall means that we have decreased the risk of overlooking relevant articles. However, by our criteria set to include or exclude articles, we were able to manually evaluate the relevance of our final sample of articles.

Limitations

We recognize that this study had some limitations. First of all, it only considered articles in English, published and indexed by September 14, 2007. Consequently, articles in other languages, articles in press, grey literature, and non-indexed articles were not included. Furthermore, MeSH terms and thesaurus vocabulary might change over time and therefore other terms might be considered in future studies. Despite all efforts to identify and analyze all relevant articles about the topic, there is a possibility that relevant articles have been excluded in the process. However, we believe this risk to be very low.

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