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This is a published version of a paper published in *Aporia*.

Citation for the published paper:
Salzmann-Erikson, M., Eriksson, H. (2012)
"LiLEDDA – a six step forum-based netnographic research method for nursing and caring sciences"
*Aporia*, 4(4): 6-18

Access to the published version may require subscription.

**Abstract**

Internet research methods in nursing science are less developed than in other sciences. We choose to present an approach to conducting nursing research on an internet-based forum. This paper presents LiLEDDA, a six-step forum-based netnographic research method for nursing science. The steps consist of: 1. Literature review and identification of the research question(s); 2. Locating the field(s) online; 3. Ethical considerations; 4. Data gathering; 5. Data analysis and interpretation; and 6. Abstractions and trustworthiness. Traditional research approaches are limiting when studying non-normative and non-mainstream life-worlds and their cultures. We argue that it is timely to develop more up-to-date research methods and study designs applicable to nursing science that reflect social developments and human living conditions that tend to be increasingly online-based.

**Key words** Anthropology, Internet, Methods, Nursing, Qualitative research

# LiLEDDA: A Six-Step Forum-Based Netnographic Research Method for Nursing science

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## Introduction

Social arenas have previously been limited geographically. However, with the Internet the boundaries of social arenas are being redrawn. One such social arena are virtual communities or, as we call them, (Internet) forums. In this study we adhere to Ridings', Gefen's and Arinze's definition of a virtual community as "groups of people with common interests and practices that communicate regularly and for some duration in an organized way over the Internet through a common location or mechanism".[1 p273] The scientific community to consider this development and to take it into account when social groups are studied. Many types of interest groups and micro-cultures that were previously studied on the spot are now found online, largely only in the form of Internet forums. These forums are shaped around the interests and needs of like-minded people and center on more or less specialized areas of interest. Some of the many areas these forums address are politics, sex, family life, music and health. According to Ridings and Gefen[2] people use virtual communities differently depending on the community type, but the main reasons are to exchange information, friendship and social support. We have chosen to study two micro-cultures, namely women with a common interest in discussing breast augmentation[3], and a micro-culture of men discussing the life turning event of becoming a father.[4] Through our practice of trial and error in online research we have developed a methodology for nursing science. Throughout this article we will use examples from our research experience to illustrate the use of this methodology.

## Background: movements in the anthropological discipline

Since the early days of cultural and social anthropology, ethnographic fieldwork has been central to collecting data when studying cultures. For example, in the 1920s, Malinowski[5] published his famous work from living with Trobriands in Papua New Guinea. During the 20th century, a shift took place in the anthropological discipline and researchers started to conduct ethnographic studies 'at home'.[6] Karra and Phillips[7] argue that the shift implied many advantages, including easier access to study sites and the need for fewer resources, as well as making translation easier. However, they also point out disadvantages such as the lack of critical distance, conflicts of roles, and a limited serendipity. A further milestone in the development of ethnography was Goffman's[8] work of describing the social situation for patients in asylums. In the 1970's, Spradley introduced an alternative way of working with ethnographic data, illustrated in his ethnography of the culture of tramps[9] and study of culture in a college bar.[10] Leininger and McFarland[11] developed the ethnonursing research method to study transcultural care within the nursing discipline. Nowadays, ethnography has become a well-established research method in several widespread nursing contexts, such as, patient council[12], nursing on an acute stroke unit[13], privacy and dignity of cancer patients[14], nursing in a paediatric intensive care unit[15], and psychiatric intensive care[16,17]. Following the anthropological movement to bring studies 'back home', the next wave began several years ago when ethnographic research methods began to be applied in virtual cultures. As Wolcott states, "One can do ethnography anywhere, anytime, and of virtually anything, as long as human social behavior is involved (or was involved […]".[18 p68]

## Ethnography becomes netnography

In general, there are many different methods for conducting research using the Internet; including quantitative methods such as surveys and intervention designs, as well as the use of virtual focus groups.[19] Use of the Internet as a source for gathering research data has been a fact for the past 20 years in interdisciplinary research fields. In consumer research, Granitz and Ward[20] studied communication within a virtual discussion group for coffee drinkers, while Werry[21] studied communication in an Internet Relay Chat (IRC) from a linguistic perspective. In sociology, Williams and Copes[22] used qualitative methods to explore the complex process of identity-making in subcultures in cyberspace. Further examples can be found in tourism research where

Lee and Hu[23] studied online complaint records from hotel evaluations.

In our own discipline of nursing, the use of the Internet as a resource for data collection has been less extensive but a literature review reveals a few examples. Enqvist and colleauges[24] used a narrative design to focus on women's experiences of postpartum psychosis, while Fox, Ward and O'Rourke[25] studied supportive interactions between patients using the same weight-loss drug; and in mid-wife research, Kouri and colleauges[26] studied family life through conversations regarding experiences of pregnancy.

It has taken years to develop guidelines and research procedures for this new world of opportunities; however, the debate on how to approach the Internet as a research site is still far from reaching a consensus. In the field of nursing research the use of this resource has been rarely discussed[27] and methodological concerns and guidelines have not yet been fully standardized. Directions in the use of the Internet are to guide nursing research in the future. Through developing methods and approaches in this area, we can help equip nursing researchers to elaborate upon new practices in relation to the caring practices taking place over the net. Earlier studies demonstrate that the advice and communication that is expressed through Internet forums dissolves the limitations and boundaries of different professions or real life power structures. Internet forums seem to give those seeking health-care advice and nursing competence an opportunity to reorganize their social relations and status in relation to health care professionals.[3,4] As such nursing researchers need to closely monitor and elaborate on this new practice as it develops, and grows in importance. The challenge is therefore that nursing researchers need to both methodologically and conceptually grasp this new challenge while also establishing an ontological coherence with the established values of the caring and nursing paradigm. In this article we present a six step method for a forum-based netnographic approach for nursing science to establish standards. In the first and original work of Im and Che[27] directions to protect human subjects in Internet research are proposed. The authors list five issues that researchers need to consider when conducting investigations using the net. In later work, Im and Che[28] discuss methodological issues for recruitment on the net. Because of the risk of bias in gaining access to informants they suggest "quota sampling", which means deliberately choosing informants with different socioeconomic and geographic backgrounds, as a way to balance groups of ethnic minorities in Internet research. Following this, two additional articles[29,30]

present methodological guidelines for using online forums and Internet communities as sources for gathering qualitative data. Over the last decade, Internet usage has expanded by nearly 500%.[31] With this rapid expansion, people have come to use the Internet for different purposes; for example, shopping[32], gaming[33], dating[34], and other forms of computer mediated communications (CMC) like chatting, e-mailing and instant messaging[35]. Now that people tend to use the Internet more on a daily basis despite geographical distances, opportunities to find people with similar interests, values and goals have expanded. Since much of social interaction has moved to an online existence, social researchers are obliged to investigate these arenas along with researching off-line realities. Research interests within nursing science are wide-ranged and extend from abstracted ontological issues to very practically-oriented problems. Examples include the study of what it is to be human and the study of human life-worlds, human health and suffering. Also, nursing research investigates issues related to the nurse-as-professional; asking how-questions. Regardless of whether the research question is more philosophic or practical in nature, it is often from the standpoint as a human being. Sometimes such perspective is almost impossible to achieve using traditional study designs, for example when studying deviant behavior and taboos. Based on the authors' ex post facto experiences and engagement in ethnography and netnography, we have retrospectively synthesized our previous work in the area to present a systematic six step research method suited to post-modern nursing research. The steps consist of: 1. Literature review and identification of the research question(s); 2. Locating the field(s) online; 3. Ethical considerations; 4. Data gathering; 5. Data analysis and interpretation; and 6. Abstractions and trustworthiness. The first letters of the steps together build the name of the method, we it LiLEDDA.

**Aim:** The aim of this article is to present a forum-based netnographic research method for nursing science.

## LiLEDDA – A six-step forum-based netnographic research method for nursing science

In this article we present a six step forum-based netnographic method for nursing science which we call LiLEDDA, an acronym derived from the steps in the process (see Table 1). This presentation summarizes and describes our own experiences and knowledge gained through conducting ethnographic research online, using Spradley's[36] structured ethnographic method in combination with Kozinets's[37] methodology, adopted to the field of Nursing and Health Science. We will guide the reader through all these steps and provide examples of applications using data we have gathered in a study exploring women's thoughts, feelings and shared values, as expressed in a breast enlargement forum. [3]

### 1. Literature review and identifying the research question(s)

As with most research methods, the researcher must conduct an extensive literature review of the topic of interest. It is advisable to use widely used databases relevant keywords. We will not elaborate in detail on how to conduct a literature review here, but refer instead to other researchers' descriptions of this step.[i.e., 38] The two central purposes of the literature review are to first understand what knowledge already exists and second, to identify what is lacking in the theoretical body of knowledge. While evaluating the research problem it is advisable to adhere to its significance, researchability and feasibility.[39] The researcher should then, based upon the existing knowledge and gap in knowledge, formulate a research question or questions that are pertinent to the present study to thereby provide complementary theoretical knowledge.

*Summary of considerations: 1) Selecting databases, 2) Evaluating the research questions.*

| Table 1: Overview of the six steps in LiLEDDA |
|---|
| 1. Literature review and identifying the research question(s) |
| 2. Locating the field(s) online |
| 3. Ethical considerations |
| 4. Data gathering |
| 5. Data analysis and interpretation |
| 6. Abstraction and trustworthiness |

## 2. Locating the field(s) online

The second phase focuses on locating an online forum where the topic of research is discussed collectively by engaged people. It is advisable to use large search engines to locate the forums, for example www.google.com or www.yahoo.com. It is also relevant at this stage to decide whether the forum should be written in the researchers' native language or second or even third language. According to the Internet World Stat from June 2010,[31] English is number one among ten top spoken languages on the Internet (536,6 million users), followed by Chinese (444,9 million users) and Spanish (153,3 million). Given these statistics, the first step is to determine which language the forum should be written in. It is also likely that more forums and more postings are available in English than in, for example, smaller language groups such as Swedish or Norwegian, if the topic is not of local interest only. One benefit of choosing an English speaking forum is that it is easier to protect the anonymity of those posting, because it can be harder to locate the source among the many possible forums. If the researchers choose to use a non-English forum, for example an Icelandic forum, perhaps because this is the native language of the researcher, this limits the diversity of forums that can be found but enriches the analytic process, as it will be easier to understand and interpret nuances in the dialogue. Given the linguistic connections between culture and language, this becomes highly relevant in LiLEDDA. Another advantage to using non-English forums is that posting-excerpts presented in the published work are often translated to English since English is the most accepted publishing language and this further protects the identity of the posters. However, we recognize that translated data can be potentially problematic for analysis for other reasons. Second, it is important that the forum is highly relevant to the research question, meaning that the main topic of the forum should be relevant to the research question. For example, in one of our studies, we elaborated on plastic surgery. In that study we located an online forum where we believed the (cultural) members were likely to have an insider perspective on our research topic. The third consideration is that the forum should be a public website, meaning that no registration is necessary to access the postings. Choosing a non-public website requires that the researchers obtain permission from the system operator and the members/posters. The choice of cloaking level is further addressed below under ethical considerations. Fourth, the researchers must decide upon which characteristics the forum should demonstrate. This is based on three variables: A) The frequency of the postings, which is set as a minimum of 100 postings per quarter (the frequency might be too high to be measured accurately on a daily or weekly basis). The frequency determines the forum's level of activity and whether it is a living culture where people interact through postings; or stated in Spradley's[36] words, their current involvement. B) The variation in data. As the researcher engages deeply with the data, different types of posters emerge that represent a wide range of social roles. Our own research has shown that some posters are newbies while others are insiders. Forums are also likely to adopt a large number of unrecorded lurkers, based on their electronic shadows as readers-only (cf. 37). While newbies, with a passing interest in the forum, often initiate postings with a question, insiders answer on the basis of their own experience by offering concrete advice, and demonstrate strong social ties to the online forum. We hold that this dialectical movement in the communication strengthens the dynamics of communication among the forum members and leads to variation in the data. C) The amount of data, which is set as a minimum of 100 postings in total to provide enough raw data for analysis. Looking to similar guidelines, Spradley[36] holds that an ethnographic scholarly study requires a minimum of six one-hour interviews, although many ethnographic works include about 30-40 interviews.[41] Our values are partly set on the basis of our own experience of scanning different forums with varying levels of activity and our experience of conducting traditional ethnographic work. Spradley[36] further states that good informants should be thoroughly encultured and be currently involved in the culture. If the forum has a low level of activity, then it is difficult to analyze basic ethnographic questions such as 'what is happening here?'. We adhere to the position that even if a minority of posters may contribute to a majority of posts with a low frequency of postings, the data might be useful. For example, in one of our studies[42] we describe the intricate power relations between the minority of experienced posters and how they backed up each other's statements in relation to the less experienced posters entering the forum. This kind of discourse analysis is possible to conduct even in forums where a minority of posters may contribute to a majority of posts. However, we do suggest using an active forum with a variety of posters interacting in discussions. Forums that do not meet these criterion will likely fail to produce a "living and active culture" and might be excluded from further consideration. One possible methodological limitation is that it is impossible to fully describe or provide a sociodemographic overview of the posters. However, by looking for demographic and social markers in the postings and signatures, the researcher can make a fair estimation of the posters' sociodemographic

representation. Fifth, several forums that might meet the inclusion criteria and thereafter determine whether to include one or several forums and which, for example on the basis of random selection or convenience sampling. In our studies, we used the criterion as described above and in the final selection we used convenience sampling as it made data selection understandable. Finally, after making a selection, the researchers must become familiar with the construction of the forum. This stage involves scanning the site, understanding how the threads and postings are organized and reading the frequently asked questions, also called FAQs, carefully.

*Summary of considerations: 1) Forum language, 2) Relevance of the forum; 3) Public or closed forum; 4) Forum characteristics; 5) Selection; 6) Familiarization.*

## 3. Ethical considerations

An early step in the netnographic method we propose is to discuss ethical considerations. There are several ethical decisions to make. First, researchers must determine whether the study and the data collection should be treated as human subject research or not. A collective perception among Internet research scholars is that Internet pages that are free to access without a password should be considered as public, and therefore research conducted using them should not be considered as human subject research.[43-48] According to Kozinets, when the researcher participates over time with forum members and/or conducts interviews online, this is clearly human subject research, whereas "[…] conversations, if gathered in a publicly accessible venue, is not human subject research […]".[37 p141] We argue that a LiLEDDA-study, which is strictly archival and cross-section observational without any intervention or interaction with the posters, is in line with these collective perceptions, and is therefore not human subject research. However we acknowledge that there is literature arguing to the contrary. [49-51] We further acknowledge that ethics review boards may have a different perspective. Therefore it must be stressed that ethical considerations depend largely on the topic of research and how the data is to be used, since there is no set of guidelines that is adapted to all online research. Second, a review of other netnographic studies indicates that researchers vary in the extent to which they act overtly or covertly in the data collection process. For instance, Blevin's and Holt's[52] netnography explored beliefs and attitudes among heterosexual men about prostitutes. To collect such data they covertly downloaded posts from public forums. Another group of researchers conducted a netnographic

study based on a forum for people suffering from bipolar illnesses.[53] The researchers tried to maximize the posters' awareness of their presence by first seeking permission from the forum operator and further by posting announcements. Kafai[54] was even more overt in her netnography of game culture among teens playing Whyville; she recruited Whyville players via an announcement and further asked for written consent and parental consent. Kafai's approach demonstrates that for some netnography research there is a benefit to inviting the posters to participate in the research. Similarly, this might be beneficial in nursing and health oriented netnography, for example, when organizing research on hospitals or controlled self-directed educational programs for patients and relatives over the net, this participative design might be useful.

In our netnography we chose to remain covert, reducing the risk of contaminating the field (cf. 55). LiLEDDA does not advise the researcher to be covert in principal or automatically. Rather, this stance must be evaluated and discussed with colleagues in each individual research project. However, we do argue that there are potential advantages of using the covert strategy since knowledge can be gained in a way that would not be possible otherwise. Also, in accordance with a well-known anthropological rule, it is important not to contaminate the field to avoid disadvantaging future research. Third, even though the netnography study[3] we referred to earlier was not human subject research and data were collected covertly, the demand to consider the ethics of the study was still highly prioritized as our intention was to use the results to provide guidance to researchers who would use LiLEDDA in the future. Nevertheless, the third ethical issue concerns the integrity of the posters and their postings. Kozinetz[37] thoroughly describes four levels of disguise in netnographic studies. Uncloaked, minimum cloaked, medium cloaked, and maximum cloaked. We argue for a high level of cloaking when conducting a LiLEDDA study in nursing science because postings can disclose highly private information, unlike other less personal postings in, for example, an online forum describing the coffee culture. [56] The highest level of cloaking provides maximum security for the posters; researchers are advised to avoid real nicknames/handles or direct quotes that can be traced using a search engine. Fourthly, researchers are advised to use colleagues, both inside and outside the project, to calculate the potential risks versus advantages with respect to the level of cloaking and whether the study is a human subject research or not. For example, it might be wise to discuss the research design and at what level interaction between

the researchers and the posters might take place. Fifthly, in human subject research, the researcher is obliged to critically reflect on the risks versus benefits of the study. Even though a study is not concerned with human subject research, it is still necessary to carry out this exercise to fully consider the ethics of analyzing the postings. We advise researchers to explicitly reflect on this in a separate sheet using headings such as "Risks for the posters in the forum", "Benefits for the posters in the forum", and further "Evaluation of the risks and benefits in a wider perspective". Finally, it is also relevant to reflect on the volume of data the study must include. The sample size should be calculated carefully such that the minimum amount of postings are included to assure that the research question can be answered, but it is also important not to include far more postings than necessary.

*Summary of considerations: 1) Human subject research or not, 2) Overt or covert; 3) Concealment of the posters; 4) Discuss with colleagues; 5) Evaluate risks versus benefits for the study group; 6) Volume of data.*

## 4. Data gathering

This phase of the research process is one of the most critical since systematic work is important for assuring the rigor and trustworthiness of the study as a whole. After locating the field and thoroughly evaluating ethical considerations, it is time to collect data. Many forum platforms, such as vBulletin, phbb, and mybb, are similar to each other in the way threads are structured. There are different ways to collect data from a forum. One way is the "sequential-top-down posting"; which means that data is gathered from the top thread and down, working backward.[sf.3] Other ways are also applicable, for example, systematic random assignment.[39] No matter which method is chosen, this stage is called gathering posts. In several of the forum platforms it is possible to use some sort of printer friendly view or pure HTML view. This is preferable to use to exclude banners and other unnecessary graphics. All the text is simply marked and then copied and further pasted into an empty text document. If data are gathered by more than one researcher, this should be done simultaneously to prevent mashing threads as new threads can be created by the posters at any time. One strategic way of collecting data is that one researcher gathers threads from odd pages in the forum, while a second researcher gathers threads from even pages. If posters create new topic during the data collection process, this bumps the last thread on an odd page to the following page which is a risk during this phase. There are two ways to minimize the risks after the data gathering session, depending on the character of the

forum. The researchers may double check that no additional threads were created during the session and pay attention to this during the raw-peeling so the data does not appear twice. If the forum is highly active and new topics are created constantly, it is possible to choose a time of day when the activity is at a minimum or have a single researcher collect the data. The latter solution would double the time necessary to gather data but reduce the risk of mashing data to a minimum.

Data in the forum should be of an archival type; as the data is published in an online forum, the researcher thereafter dumps data. This means that data are copy/pasted from the screen to a text file. The forum used in our example of an LiLEDDA-study[3] had a printer-friendly function which reduced the amount of irrelevant information. The dumping procedure was made cross-sectional from the forum's first posting to the last and was carried out in five hours. The data collection yielded about 720 threads, 5400 postings and 2046 pages written in 10 point text, single spaced. Depending on the forum, there might be non-text based data (i.e., pictures, and movie clips). These are sometimes accessible but not always for unregistered visitors. In several threads, the posters advertised external web pages (such as blogs or surgical clinics web pages). We strongly recommend excluding information such as external links because it is easy to become led away from the main data. Therefore, we argue for adherence to stringent inclusion and exclusion criterion and systematic rigor. However, pictures can be useful artefacts, though we chose to exclude pictures. During data gathering and the data analysis, field notes were also written down and were treated as data. To enhance rigor, protocols were made. To make the process as systematic as possible to maintain control over the data, a protocol was created using an excel document with six columns, that included: 1. Forum page; 2. Dumped (the dumper signed this box after dumping the forum page); 3. Comments / Initial analytic notes; 4. Number of pages in the text document; 5. Number of pages in the text document after raw peeling (explained in the data analysis section); 6. Percentage of data loss after raw peeling.

*Summary of considerations: 1) Gathering posts; 2) Dumping; 3) Writing data protocol.*

## 5. Data analysis

An early step in the analysis procedure is the writing of memos which is a particular ethnographic tradition that helps the researcher to maintain a reflexive approach.[57] Aktinson[58] writes that "Memos bring analytic focus to data collection and to the researcher's ideas".[58 p167] We recommend

including activities like writing analytic and methodological memos. Analytic craftsmanship involves several steps. First, the text document with pasted raw data should be processed. Even though text is copied/pasted data from a printer friendly view, some debris often remains. By deleting such debris, that is the forum logotype, parent thread labels and quotes from earlier postings, the text documents are "raw-peeled". Like the dumping procedure, this is a repetitive activity, but it enables the researcher to begin honing in on the data and to record further memos. In our study[3], the data was reduced from 2064 to 1479 pages, by raw peeling, with a range of 16-44% debris reduction and a mean value of a 28% reduction. The remaining 1479 pages net for analysis were considered sufficient for carrying out a qualitative study. Second, the researcher must skim the data. Through this activity local knowledge of the language in the postings and identification of culturally specific recurrent terms is obtained. We identified terms such as "cc:s" (size of implants), "rippling" (wrinkles on the implants), "DB" or "double bubble" (deformity of an implant) and an analytical memo concerned posters supporting each other. Third, it is preferable that two or more researchers skim the data separately, such that the results can be compared and discussed; focusing on what paths, clues and traces are relevant for deeper analyses and interpretation in relation to the aim of the study. This process is called "sorting data". Fourth, the research must carry out an in-depth analysis, engaging with the data on a deeper level. This can be done both quantitatively and qualitatively. In our study, we considered qualitative in-depth analysis to be the most appropriate in relation to the study aim, which focused on peoples' shared values, feelings and thoughts. However, in general LiLEDDA should not be considered to be limited to qualitative in-depth analysis as different research questions might be best answered by using other methods, for example parametric statistics (cf. 59). The interpretation of the data involves the researcher merging the initial and superficial thoughts that were generated from skimming and analytic memos. It is then possible to sort out different cultural domains; that is, a collection of different items which relate to each other, fit together, and are the same kind of thing. A cultural domain might be the 'implants' and 'post-operative complications' when studying the culture of women who undergo breast augmentation. In this analysis a netnography should ideally include a consideration of the context for the forum talk, how people come to the forum, how they post, and how the researcher integrates (or not) with the forum. For example, we found that there were differences between those who were planning to undergo a breast augmentation and those who had undergone the procedure years before.[3]

We were inspired by Spradley's[36] approach to analyzing ethnographic data to initially reveal cultural domains. Specifically, we applied Spradley's structure for analyzing data, and asked descriptive, structural and contrast questions. During the initial phase of the analysis, it was obvious that the artefact, "the implants", was central in the culture. When the analyst has identified such a central artifact or domain in the culture, it must be deeply analyzed; how it is used in the language and which attributes are associated with it. In our case, the implants had several parameters, such as size, shape, material, and so forth and were frequently discussed. The implant played an important role when having a breast augmentation. Questions were asked, including "When are these parameters discussed?" In line with Atkinson[58] we analytically assumed there was a difference between posters who had already undergone the operation and those who had not yet done so. Further questions needed to be asked, such as "What are all the differences between discussing the implants' parameter before and after the operation?" Prior to the operation, the posters were expressing strong emotional feelings (again we operationalized all kinds of feelings by posing descriptive questions). We also analyzed other posters' reactions to posts about feelings that were expressed prior to the operation and concluded that women who had undergone a breast augmentation earlier cared for those who had not come so far in the process. By analyzing cultural domains in this way, categories and themes crystallized according to differences and levels of abstraction. This resulted from traversing between immersing ourselves in data and temporarily breaking from this to reflect.

*Summary of steps: 1) Raw-peeling; 2) Skimming; 3) Sorting data; 4) In-depth analysis.*

## 6. Abstractions and trustworthiness

The last step in LiLEDDA is to discuss the results and argue for the trustworthiness of the study. First it needs to be stated that trustworthiness depends on the epistemological position of the researcher. Since this is a fundamental question related to the aim and claims of the researcher and the research conducted it will not be covered here. However, we acknowledge that there are many existing assumptions about epistemological positions in ethnographic research (cf., 9,11). We suggest that a discussion written following a LiLEDDA analysis should follow the same conventions as other academic writing based on other scientific methods. We do recommend reviewing well-acclaimed methodological books on this step. Here we can briefly recommend some very general guidelines. First, state the major findings; then

further discuss how they are related to earlier research and theories. One might also consider whether it would be useful to extract one or two concepts from the findings and further discuss these in a wider context. Finally, one should highlight any implications the findings have in a wider context. In our study of a breast augmentation forum, we found that the women used the forum to educate one another and provide support; these are two central ingredients in nursing. We used Orem's[60] self care theory to discuss how the women cared for each other over the Internet and the concepts "cyber nursing" and "torrenting" were coined. In this abstraction process it is important to not only grasp the methodological principles presented in this article. Considerable in this step is to grasp the conceptual and theoretical levels of nursing knowledge to preserve the ontological coherence of nursing research even as new methodological approaches are introduced to study a new field of reality. We will return to this important topic of epistemological interest for nursing research in the discussion section below.

Achieving trustworthiness in a qualitative study is heavily debated in scholarly literature.[61-64] More specifically it is also debated in the literature on ethnography.[57,65] Kozinetz[37] focuses on member check as a way to achieve credibility in a netnographic study. We do not recommend member check as epistemologically it is highly contradictory to qualitative (nursing) research (cf. 66,63). The basis of epistemology in nursing research is to adhere to multi-perspective truths, in line with the life-world theory presented by Dahlberg, Drew and Nyström.[67] Seeking validation from the cultural members would imply that the cultural members express a greater truth, or an absolute truth that the researcher can validate independently. This kind of validation tends to mirror the findings toward the cultural member's own self picture rather than lending trustworthiness to the researchers' interpretation. Along with this argument it is important to clarify that the researchers' truth is not to be considered as more truthful or more accurate than that of the cultural members'. Although in a netnographic research project, the voice of the researcher is given precedence as being the one holding an outside perspective whose task is to channel a description of the culture through a netnographic lens and present it in a wider perspective. Furthermore, according to Schien[68], a culture is ordinated by several levels, yet members are not conscious of the most profound levels of a culture's structure. Following this, only the more superficial levels of a culture would be subject to validation. We propose that researchers using LiLEDDA adopt other values to increase the trustworthiness of their study.

First, we would argue that the data is trustworthy because it was not intended for research. Several researchers within suicide research[69-71] argue that the subjects' personal diaries, daily notes, reflections and personal notes are regarded as the most trustworthy data in answering the question of why people commit suicide. This is because the data was never intended for public consumption. However, even if some methodological considerations and limitations associated with suicide research differ from those of netnographic research, the validation of data as shared without the intention of scrutiny and or having been constructed for research intentions might be regarded as the same.

Second, netnography is sometimes criticized for being a lazy research method, and is sometimes referred to as speed or armchair ethnography because the researcher does not physically go out into the field and metaphorically "get their hands dirty". Netnography is, of course, hugely time saving in contrast to traditional ethnography; for example, the researcher can copy/paste activity from an Internet forum rather than carry out interviews. Nevertheless, the other methodological steps are just as demanding as in traditional ethnographic studies. Moreover, in the study we refer to as an example above[3] we gathered almost 1500 pages of qualitative data, which is far more than would normally be collated in most qualitative studies; it is a highly demanding effort to read and become familiar with such a volume of data. In comparison, Mason[41] concluded that the mean number of interviews in qualitative studies from a sample of 560 PhD studies was 31 interviews. In ethnographic studies, the mean was 37 interviews. Based on our experience of transcribing qualitative interviews, one-hour of audio typically amounts to about 20-25 pages of text. This means that the data in our study is equal to about 75-100 qualitative interviews.

Third, trustworthiness is interconnected with how the findings are presented. We hold that in a forum-based netnography data must be presented in such way that it makes sense to an outside reader but is still a description of the raw data originating from the culture studied and has not been culturally translated - we call this "releasing findings". We can provide an example of releasing findings from our netnographic study of a breast augmentation forum culture.[3] In this study, we used Orem's[60] self care theory to describe the forum culture and held that the posters were both the agent of action (the one acting) and the object of action (the one acted on) as they supported each other and performed "cyber nursing". This theoretical reasoning was further illuminated in the finding, for example, as we

released a conversation between three posters. One of these expressed her problem of having a hunchback after the operation, while two other posters gave support and offered advice on what might be helpful. Releasing findings in this way is rather similar to Geertz's[72] concept of "thick description" in anthropology.

Finally, we argue that trustworthiness in a LiLEDDA study is linked to the serendipity of the findings. Serendipity means "A chance and unexpected discovery during data collection, often by searching for something else".[73 p368] We would like to explain how serendipity is linked to trustworthiness with an example from our study of breast augmentation. [3] Before conducting the study, we thought that we would produce an index of posters and the reasons they gave for undergoing breast augmentation. However, we clearly discovered something quite different as a result of our deeply engaged analysis. Through in-depth qualitative research we adopted an emic perspective and began to "sense the communion" among the posters and to understand the posters' shared values, feelings and thoughts within the culture of breast enlargement Internet forums among women undergoing aesthetic plastic surgery. We argue that serendipity also reflects important aspects of trustworthiness in a LiLEDDA study.

*Summary of sources of trustworthiness: 1) Non-research-produced-data; 2) Extension of data; 3) Releasing findings; 4) Serendipity.*

## Discussion

In this article we have presented LiLEDDA, a six-step forum-based netnographic research method for nursing science. In summary, these steps are: 1. Literature review and identification of the research question(s); 2. Locating the field(s) online; 3. Ethical considerations; 4. Data gathering; 5. Data analysis and interpretation; and 6. Abstractions and trustworthiness. LiLEDDA is a research tool for gathering data from online forums. We would like to further elaborate on the use of LiLEDDA as we find the development of such a tool to be a step in nursing science in the context of the expansion in Internet use in society. One limitation of LiLEDDA is that it was created to study privileged populations who have access to the internet and internet forums and therefore have the possibility to express and debate issues online. A wide range of the human population consists of marginalized populations, including those without electricity, homeless people, analphabetics, and people living in countries governed by dictators, those who are imprisoned and those who not speak the language of forum. Although internet usage is increasing

exponentially, Internet World Stats show that only 13 % of the population in Africa has internet access, although this rate has grown by almost 3000% between 2000-2011.[40]

### Updating intersubjective possibilities

Within nursing science, there has been a long tradition of promoting face-to-face interviews as a way to gather qualitative data, which, to our understanding, has its roots in the nursing discipline, and derives from the concept of presence as central and interconnected with inter subjective connections, engagement, and interaction.[74] We agree that traditional research approaches and designs for interacting with informants are important for the science and contribute to in-depth knowledge. However, we also argue that it is to develop more up-to-date research methods and study designs applicable to nursing science that reflect contemporary online socializing. Presence is no longer existent in face to face interactions only. As Chen and Yen[75] elaborate, online presence exists through interactivity on the Internet. Further, Rau, Gao and Ding[76] hold that both verbal and affective intimacy exists online in social networks and is correlated with the frequency of postings. With this paper, we want to highlight that there are reasons to review established concepts as interactivity in nursing research and the inter-subjectivity of the researcher and the "informants".

### Broadening epistemological interests in nursing science

People, with their specific needs, problems and desires, sometimes become interesting for scientific studies conducted by nurses, psychologists, occupational therapists and so on. Especially when a physician has given them a diagnostic number, or when they are in some way given the epithet 'patients' (sometimes consumers). Whatever they are labelled, these people hold specialized knowledge about their own feelings, thoughts and values in life. Many individuals have problems and needs that surpass those of the average citizen. Ironically, as the occidental society, from some perspectives, becomes more and more individualized and liberated[77], deviant behavior still seems to be stigmatized and regarded as taboo; for example as in the case of psychiatric illness[78],sexual deviations[79], living with HIV[80], poverty[81], and obesity[82]. Regardless what kind of stigmatized groups of people or subcultures one considers, some of these will automatically be more interesting as research participants than others because of personal, political or economic interests. Nevertheless, traditional research approaches are also limited in studying these non-normative

and non-mainstream life-worlds and their cultures. From a nursing science epistemological orientation toward humanity issues, health, environmental living, problems and nursing needs, as well as human suffering, it is not always possible to gather data by using traditional study designs. Our article suggests that this method of gathering data in the Internet-age is inevitable when studying specific cultures that would be very time consuming and hard to access using traditional approaches and study designs. As Murray and Sixsmith[83] report, online communications yield more honest responses, particularly from those participants who are asked to provide personal and sensitive information. Because the web is important for interacting and sharing in people's lives around the globe, taking a step forward from ethnonursing research (i.e., 11) to nethnonursing research gives vital trajectories for science based knowledge in the fields of nursing science for the future. Therefore, our final and summary stance is that the online netnographic forum-based method, LiLEDDA, is strongly advisable for use in nursing science.

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