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**Role of Health Information Professionals (HIP)s in Promoting
Health Information Literacy(HIL) among Nurses: A Case
Study of Selected Norwegian Health institutes.**

Abstract

Background As health has direct and indirect bearings upon many other issues like economy, environment, social progress etc., information literacy in health sector is one of the very important aspects, which has emerged as an area to be paying attention. Health information professionals (HIP)s have been playing a vital role in promoting health information literacy (HIL) with changing dimension in health care sectors. Nurses' make up the largest group of health care practitioners who have been practicing in a widest variety of health care and health related positions. By integrating HIL in nursing educational curriculum and, creating scopes and opportunities to become more health information literate, nurses' can bring sustainable qualitative changes in health care sector. HIP is one of the key stakeholders to seize the opportunity to play with their roles in promoting HIL among nurses.

Research aim The research has an aim to figure out the existing roles and newly arisen roles of HIPs in promoting HIL among nurses from Norwegian perspective through a systematic way of understanding. The study has also a focus on the changing perspectives of HIL, or in other sense, the continuum regarding HIL from which the new roles have been arisen.

Research approach To figure out these roles in relation to the promotion of HIL among nurses, the study follows deductive research approach where a model underpinned by Gidden's *Structuration Theory* is developed to guide the case study. Two types of method, i.e. survey and interview, are embedded in the case study design to gather information from two groups: nurses and HIPs. As the concept of the agency is the pivotal of the model, the main aim of gathering information is to come up with the constraints of the agency and possibilities of change that agency enables.

Findings The key findings of the study are presented from two perspectives: the awareness status of nurses and the role of HIPs. The roles are viewed from five categories: service provider, administrative/managerial, educator, researcher, and student/learner where four aspects are embedded in each role i.e. prototype roles, roles beyond prototype, newly arisen roles, and roles coming from socio-political context.

Conclusion Then study draws conclusion summing up with findings as per objectives of the research where each objective fits with the proposed model underpinned by Giddens's *Structuration Theory*. Finally, the study shows the justification of the proposed model through figuring out different agencies from both domains along with agency's constraints and abilities for possible changes in the structuration process.

keywords/subject: health information literacy, health information professional, nurse, structuration theory, agency, norwegian health institute

Declaration

“I certify that all materials in this dissertation which is not my own work has been identified and that no material is included for which a degree has previously been conferred upon me.”

N Hasan

.....

(Signature of candidate)

[Submitted electronically]

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List of Abbreviations

- CAS (Current Awareness Service)**
- CINAHL (Cumulative Index Nursing and Allied Health Literature)**
- CRISTin (Current research information system in Norway)**
- EBLIP (Evidence based library and information practice)**
- EBN (Evidence Based Nursing)**
- EBP (Evidence-Based-Practice)**
- E-resource (Electronic Resource)**
- HIL (Health Information Literacy)**
- HIP (Health Information Professional)**
- HIPs (Health Information Professionals)**
- ICT (Information and Communication Technology)**
- IFLA (International Federation of Library Associations and Institutions)**
- IL (Information Literacy)**
- IP (Information Professional)**
- IT (Information Technology)**
- LIS (Library & Information Science)**
- MEDLINE (Medical Literature Analysis and Retrieval System Online)**
- MeSH (Medical Subject Headings)**
- n.b. (No Date)**
- NEHL (Norwegian Electronic Health Library)**
- OA (Open Access)**
- Ph.D (Doctor of Philosophy)**
- PICO (Patient/Population, Intervention, Comparison, Outcome)**
- SMH (Section for Medicine and Health)**
- WHO (World Health Organization)**

Chapter-1: Introduction

1.1 Background of the study

As information is increasingly being considered as an instrument of socio-cultural change, casual observers as well as development activists and specialists alike have taken an active interest in the issue of information and social development. In the same line, one sector is education and research that is the life-blood of social development where information has been playing a pivotal role. *Modern age* or the *Digital Era* has been watching the tremendous growth of information or in other sense, information explosion, along with the Information and Communication Technology (ICT) and technological devices. All these advents and advancements have imposed positive changes in every sector, especially in education (teaching–learning) and research, of socio-cultural development with embedded challenges in terms of figuring out the appropriate information, sources of information, media of information and way of handling information and communication technologies and technological devices against information seeking for effective decision making at vocational, professional and scholarly levels. Eventually, a set of competencies and skills have been required to a varied degrees at different levels for the effective and best use of information, which has led researchers to coin with the term *Information literacy* (IL) and, was first used by Paul Zurkowski in the year of 1974 (ProQuest, n.d.). Since then, IL has been widely investigated and, been recognized as the overall critical literacy for the 21st Century (Bruce, 2002). IL has been taking different notions and versatile dimensions based on de-contextualized or broader contextualized and specific contextual perspectives. When different de-contextualized or broader contextualized aspects of IL appear in different blocks or sectors, they are being addressed as a particular literacy of that respective block or sector. Scholars like (Olof Sundin, Limberg, & Lundh, 2008) had mentioned that the IL should be conceptualized in relation to its empirical approach that differs between and within domain. IL has also been conceptualized within the context of lifelong learning, which has expanded the concept of IL beyond library instruction and the concept of skill-based learning and problem-based learning (Marcum, 2002). However, a number of research works have been revealing the importance of integrating and incorporating IL as embedded teaching-learning object in education and research where the Library and

information professionals and practitioners alike have a great opportunity to create scope by extending their activities through playing with significant roles in promoting and enhancing Information Literacy among the stakeholders.

As health has direct and indirect bearings upon many other issues like economy, environment, social progress etc., information literacy in health sector is one of the very important aspects, which has emerged as an area to be paying attention. . By integrating HIL in educational curriculum and, creating scopes and opportunities to become health information literate, countries can bring sustainable qualitative changes in their quest for development.

The term 'health care' is used to cover a wide range of professional studies in Norway, including nursing, physiotherapy, radiography, laboratory techniques, speech therapy, occupational therapy, caring for people with learning difficulties, and to a certain extent, social welfare (Flor, Jakobsson, Mogset, Taylor, & Aasen, 2001). All those different groups of health care professionals have been existing within the three elements of health care system: 1. personal health care services available to individuals and families through hospitals, clinics, neighborhood centers, and similar agencies, and in physicians' offices, and the clients' own homes; 2. the public health services needed to maintain a healthy environment; 3. teaching and research activities related to the prevention and treatment of disease (Miller, Keane, & O'Toole, 1992). These professionals work in a broad range of settings, from hospitals and public health units to private practices and universities, all of varying sizes(Leckie, Pettigrew, & Sylvain, 1996). HIL could be viewed from different perspectives such as the HIL of health care practitioners, patients and the public. If the literacy is considered from the granular level in terms of health care practitioners, it will comprise the literacy for physicians, nurses, administrators, medical representatives, pharmacists, dentists, dieticians, technicians, pathologists, and physiotherapists, – to name a few, which can be further classified by area of specialization, such as community health or gerontology (Miller et al,1992).

Nurses – engaging as learners and working professionals – make up the largest group of health care practitioners who have been practicing in a widest variety of health care and health related positions from hospitals, community health settings, and entrepreneurial firms to governmental positions where they review and monitor care (Blythe & Royle, 1993).

From the context of health sector, health information professionals have been playing a vital role towards their consumers in promoting health information literacy with their prototype or hidden role (Anderson, 1989 ; Cooper, 2011) and newly arisen role with changing dimension in health care sectors. Nevertheless, the role of health information professionals could be varied in different socio-political, socio-cultural, and socio-economic contexts.

1.2 Statement of the problem

Nursing as occupation had considerably changed in the United States during the early part of 20th century (Burggraf, 2012) and nursing education has transformed from vocational education to academic studies during the second half of the 20th century in the Scandinavian region, so as in Norway. Due to that transformation nursing has been created as a multidisciplinary research discipline where information literacy – established through the emergence of nursing research journals, libraries, databases and websites – is essential for the professionalization of occupational life and for the scholarly communication, and thus nursing is increasingly becoming more formal knowledge, and thus information, intensive (Olof Sundin, 2008).

As the Nursing education is the second largest education in Norway, library services for nurses, both students and practitioners, are provided by college, university and hospital libraries. Services to nurses' vary according to their place of work or education. Those variations depend on the nature of the library's parent institution, institutional information practices in relation to its educational goal, institutional strategy for engaging learners in their learning process through integrating health information literacy (HIL) program seamlessly in the curriculum, and the institutional provision regarding the required ability and expertise of HIPs. As nursing professionals have to deal with growing amount and complexity of information, the HIP's role in this regard is very important in promoting HIL among nursing students and staff (Karjalainen & Salomäki, 2010) However, the roles of HIPs in Norway vary either marginally or significantly, in spite of belonging in the same socio-cultural and socio-political context.

In the same line, nurses have a very significant role in health care profession as they have been dealing most closely with patient issues from different aspects. The frequently

changing aspects of nursing science have been setting the requirements towards the nurses for attaining the education and skills in HIL to cope with the current trends. In Norway, there is a national focus within the nursing profession on evidence-based practice (EBP) (Kolstad, 2012), which calls for promoting the literacy skills of the nurses' at their work places to keep abreast of developments in one's own field by: i) applying one's own expertise; ii) considering patients' needs; and iii) obtaining recent research that may assist in the development of new ways of working (Nortvedt, Jamtvedt, Graverholt, & Reinar, 2007). HIL skills are a prerequisite to an evidence-based approach where the HIPs have the ability to play with their roles through curricular-integrated HIL program for assisting nurses to become research connoisseurs or in other word, to make them life long learner (Shorten, Wallace, & Crookes, 2001) through meta cognitive approach of learning (C. S. Bruce, 2003; C. Bruce, 2008) so that they could be able to figure out the best practice fitting to a specific phenomenon. As nursing education is more like practical education, learners and working professionals are supposed to practice their profession at working place, but not all nurses are acting in a similar way when they are working at different health care institutes or in a hospital environment, depending on several factors such as: from which institute they have got their education, to what extent they had been kept aware of HIL, and in which way they had been engaged in learning process. However, very little literature reveals that agent does not make any significant impact in promoting literacy skills among nurses' rather than self-directed learning or literacy skills, which mean awareness regarding HIL among nurses varying at individual level in relation to their self-motivation or to their age factor, and these issues have affected the roles of HIP as well. On the contrary, it is evident from the large amount of literature that in most of the cases different agents, of course consists of and directed by people, have been working in promoting literacy skills of a particular community or group of communities, so as the nurses. Keeping all those issues in mind, the present study has come up with the following research goal and objectives from Norwegian context.

1.3 Research Goal

The research has endeavored to illustrate roles that are being played by the health information professional (HIP)s of some selected Norwegian Health Institutes in promoting health information literacy (HIL) among nurses.

1.3.1 Objectives of the study

To achieve the research goal, the following objectives are followed by the study:

- i. To know the awareness status of HIL among the nurses.
- ii. To examine the activities and initiatives those have been conducted and taken by the HIPs in promoting literacy skills of nurses.
- iii. To learn about the problems being faced, and the potential of being perceived by HIPs in the application of their expertise regarding the promotion of HIL among nurses in the selected institutes.
- iv. To put effort in providing possible recommendations rational for overcoming those problems.

1.4 Significance of the study

The study bears some notable significance from the broader and specific point of views. Firstly, the present study works for showing the significance of HIPs roles that will help decision makers to pay attention regarding the recognition of their roles, and eventually, it will affect their social dignity and professional status.

Secondly, there is no existing model for the role of HIP in promoting the HIL among consumers like *The Johns Hopkins Nursing Evidence-Based Practice Model* where space has been provided for HIP's role (Ahip, 2009), and keeping such issue in mind, the study figures out and plans one model underpinned by the *Gidden's Structuration Theory* for the role of HIP along with the role of National/Authoritative body in the domain of health care practitioners, which is the basis of data collection, data analysis and discussion, and recommendations of this effort. In addition, this model is also applicable for the role of HIP in other geographical context beyond the Norwegian context.

Finally, as there is a scarcity of literature regarding the role of HIPs from Norwegian context, this effort, at least to some extent, contributes to literature regarding the role of HIPs from Norwegian perspective as well as for the whole context.

1.5 Anticipated Outcome of the study

As Norway has been belonging in developed countries with its strong economic condition, most of the sectors have been carrying out their activities within well-established infrastructure. Nursing sector is not an exception of that and in the same line, the study has an anticipation in a way that HIPs have been playing collectively very significant roles in promoting HIL among nurses, either directly or indirectly, in spite of variations of institutional practices at individual context.

1.6 Limitation of the study

The study has several limitations, which were mostly originated from the time constrains. Firstly, although the study took a conscious effort to ensure equal representation of nurses belonging in all categories such as : student nurses, advanced nurses, working professionals, community health nurses having specialization in nursing field and teaching faculty in nursing education, it could not be achieved thoroughly specially due to time constraints and the lack of volunteers.

Secondly, The similar constrain was applicable in covering a wide range of HIPs as informants working in a versatile position in nursing domain, however, time constrains is more responsible than the lack of volunteers is this regard.

Thirdly, it was not possible to cover a wide range of health institutes in Norway dealing with nursing issues for the same constrain. Besides this, due to the small number of volunteer participation from the nurses' side, either it was not possible to draw general comments from those results that beard real value from the context of whole Norway or for the rest of the world; rather, the result was an indicative of an overview reflected from the particular contexts as those were within the scope of the study.

Finding literature in English for Norwegian context is another limitation of study as most of the literatures regarding the identified issue are in Norwegian language.

Chapter-2: Literature Review

Information Literacy (IL) is a vast term while Health Information Literacy (HIL) is one aspect of IL focusing on the expertise or mastery (Ek & Widén-Wulff, 2008) regarding health information and in the same line, it is possible to switch from one another i.e. from IL to HIL or vice-versa.

2.1 Multi-faceted domain of IL and the role of Information Professional

The idea of *information literacy* (IL), emerging with the advent of information technologies in the early 1970s, has grown, taken shape and strengthened to become recognized as the critical literacy for the twenty-first century (Bruce, 2002). In the same line, IL, either at higher-level or lower-level (Lupton, 2004a), is somehow embedded in or associated with the *transmission* concepts of information and eventually, information transfer and the domain of *information artefacts* (Olof Sundin, 2008) have been greatly permeated by the concept of IL. All these have been catching the attention of LIS scholars, information practitioners and librarians, which resulted in a huge amount of literature on the topic and finally, it has been treated as an area of study and in turn teaching and learning. The concept of IL has been addresses with different terms or combination of terms in a myriad of ways such as: ‘infoliteracy’, ‘informacy’, ‘information empowerment’ ‘information competence’, ‘information competency’, ‘information competencies’, ‘information literacy skills’, ‘information literacy and skills’, ‘skills of information literacy’, ‘information literacy competence’, ‘information literacy competencies’, ‘information competence skills’, ‘information handling skills’, ‘information problem solving’, ‘information problem solving skills’, ‘information fluency’, ‘information mediacy’ and ‘information mastery’(Virkus, 2003). Scholars like Audunson & Nordlie(2003) found no exact parallel of the term IL in Norwegian language, however, they had figured out, at the same time, the existence of the core element of IL– the ability to find and critically evaluate information (“Information Literacy Competency Standards for Higher Education,” 2000; Bundy, 2004)– within

learning and ICT-based context– in political strategies relating to information as well educational reforms.

Information literacy has been defined from the perspective of library and information science which mostly focus on the series of tasks and concepts related to information seeking and used while educational definitions of literacy tend to focus on the role of various literacies on learning (Mitchell, n.d.). It is evident from the scholarly discussion that IL has revealed as divergent conceptions in practices (Tuominen, Savolainen, & Talja, 2005 such as digital literacy, cyber-literacy media literacy computer literacy, visual literacy ICT literacy (Bawden, 2001; Limberg, Sundin, & Talja, 2012; “Office for Information Technology Policy,” 2013), which was encouraged Mackey & Jacobson, (2011) to reframe information literacy as meta-literacy with a differentiating approach between the traditional IL & meta-literacy. However, researchers like Pilerot (2006) viewed the difference in approaches as a continuum that reaches form regarding information literacy as primarily generic skills to regarding information literacy as embedded in the courses and programs of various subject domains. Whereas scholars like Addison & Meyers (2013) have come up with an approach to synthesize the concept of IL as “i) the acquisition of ‘information age’ skills, ii) as the cultivation of habits of mind and iii) as engagement in information-rich social practices with an aim for creating a stronger, more united field of study, as well as a clearer alignment between information literacy & the formal and informal contexts where people employ & develop information literacy”.

IL education has evolved as library instruction program which were also addressed as library orientation program, bibliographic instruction, reader instruction, library user or reader education and information skills program, (Wang, 2010; Dewey, 2001’ Fjälbrant & Stevenson, 1978; Lupton, 2004b; Stevenson, 1977). This kind of instruction program have been mostly initiated by the librarians (Wang, 2010; C.S. Bruce, 1997; Corral, 2007; Breivik, 1992; Doyle, 1992).

Wang (2010) had summarized the four phases as Christine S. Bruce (2000) found in IL research development where she took Khulthau’s (1988) view regarding IL– ‘a way of leaning’– as the basis of her first phase, known as ‘precursors’. IL began to be used in research during the second phase (1990–1995) called ‘experimental’. The third phase was

exploratory (1995–1999) where a variety of paradigms beyond the positivist approach were explored to IL research which pushes researchers to be guided by different theoretical perspectives throughout their IL research, especially, phenomenography, socio-cultural, discourse analysis and structuration theory (Andretta, 2007; (Vygotsky, 1978; Foucault, 2002). Limberg, Sundin, & Talja, (2012) made a comparative summary of three theoretical perspectives in conceptualizing information literacy in the following manner.

Theoretical perspective	Focus	Research Outcomes	In formation Literacy
Phenomenography	Different patterns of ways of experiencing information literacy	Understand variation in people’s experiences	A pattern of variation of experiences of engaging with information in order to learn
Sociocultural Theory	Tool-based information literacy practices within specific contexts and communities	Understand people’s practices within specific communities	Learning to communicate within a specific practice
Discourse Analysis	Identify broad historical information literacy discourses	Understand variation in interpretive repertoires	Constructed differently in different conversational contexts

Table–1 *Conceptualization of IL through three theoretical lens.*

All these three perspectives are well represented in Nordic IL research as apposed to the large body of IL research conducted using cognitivist approaches. Those three approaches conceive of IL not as a stand-alone discipline or specialty, but as a field of research where theoretical understanding of information, learning and knowledge are fundamental (Limberg et al., 2012).

Zheng (n.d.) made another effort in conceptualizing IL through Gidden’s structuration theory in the following manner.

Structuration Theory	Applied on information Literacy
Duality of Structure	Information literacy exists at both social and individual level, the former being the medium and outcome of the latter.
Structuration	Information literacy evolves as social practices are shaped by actors.
Three modalities: interpretive scheme, facility, norm	Information literacy embodies the understanding and usage of information, institutional support for information, and information norms.
Agency <ul style="list-style-type: none"> ▪ Knowledgeable individuals are capable of acting differently; ▪ Agency is situated; ▪ Social and system integration 	Cultivation of information literacy <ul style="list-style-type: none"> ▪ Information literacy can be improved by motivating individual interest and determination; ▪ Need to address both individual aspirations and social environment ▪ Need to integrate situated action with structural changes.

Table–2 Zheng’s conceptualization of IL through structuration theory.

Bruce had figured out the fourth phase addressing ‘evolving phase’(2000–), as we are still in it, which refers to the wider variation of consolidated research agenda (Wang, 2010). She (C.S. Bruce, 2013) has further summarized IL research and practice through identifying experiences phenomenographically in her key note at *European conference on Information Literacy (ECIL)*, 2013, from which Webber, (2013) have picked different ways of experiencing IL as “knowing myself” or “striving for wellness”; “growing faith” or “serving community” and “a communal, shared information experience...” while taking given example of Bruce from the point of view of *health information Literacy*, *religious information literacy* and a *native American IL* respectively. Bruce made a conclusion of her key note in a way as “in addressing the future I will return to advocacy, the recognition and pursuit of the transforming and empowering heart of information literacy; and suggest that for information literacy research, including the experiential, a turn towards the emancipatory has much to offer”.

Most of the articles in all these phases regarding IL fall into one of the four areas (Mitchell, n.d.) : research (Edwards & Bruce, 2002; Miriam, 2007; O Sundin, 2008); case studies (Corradini, 2008; Mackey & Jacobson, 2004) , meta-analysis (Bawden, 2001;

Koufogiannakis & Wiebe, 2006; Rader, 2002; Snavely & Cooper, 1997; Virkus, 2003) and definition or foundation articles (Webber, 2003; Owusu-Ansah, 2005; Tuominen et al., 2005).

From the seven faces model of Bruce (1997), it is evident that information being at the core of the experience in faces 1-4 as those faces include information technology, importance of finding and understanding sources, ability to define the structure and scope of an information problem, and information management; in the same line, learning is the core focus in faces 5-7 as those use cognitive states referring to knowledge construction, knowledge extension and wisdom (Webber, 2013; Mitchell, n.d.) The learning faces indicates IL education is not a library issue or information seeking and finding issue (Limberg et al., 2012) rather it is a lifelong learning issue, a campus issue and a education issue (Rockman, 2004). Whereas some of the studies, especially Sundin (2008), made an effort to conduct research in bridging literacy research between the education and library fields. In relation to that, information professionals (IP) are in a good position to collaborate with academic staff in the higher educational environment to provide IL education (Wang, 2010). Such collaborative activities has revealed in a consolidated manner in health information literacy (HIL).

2.2 Health Information Literacy (HIL) in Nursing Domain and Role of Health Information Professional (HIP)s

The emergence of the term health information literacy (HIL) has elevated awareness about the importance and relevance of information literacy in a health context (Yates, Partridge, & Bruce, 2013). Nielsen-Bohlman, Panzer, & Kindig (2004) defined HIL as “the degree to which individuals have the capability to obtain, process, and understand basic health information and services needed to make appropriate health decisions”. Hsu, Johnson, & Brooks (2003) viewed HIL in relation to IL as “the acquisition of information when needed, assessment of information with scientific facts and expert advice as knowledge base, and utilization of the results of the combined actions to execute knowledge base strategies leading to informed decisions”. The field of HIL brings together research and practice from diverse fields including education, health services, social & cultural sciences and the many organization whose actions can improve or

impede health literacy (Nielsen-Bohlman et al., 2004). Research in health care education and services, especially in nursing sector, have been permeated with the newly arisen culture of evidence based practice (EBP) (Melnik, 2011; Wilson, 2011; Ahip, 2009) due to the increasing demand for cost effective & quality health care (Jennings, 2000; Koehn & Lehman, 2008). Thus, a greater emphasis has been identified as crucial for promoting excellence in health care (Margaret Coopey, 2006 ; Shirey, 2006). In the same line, HIL, as the core of EBP, has gained the attention of decision makers in health care sector. EBP has been conducted in health care profession and education in two ways: clinical studies and systematic reviews (*Evidence-Based Practice*, 2012). As HIL is one of the aspects of information literacy, all the theoretical perspectives and methodological issues are applicable as those are in information literacy. Nurses – occupying a large group in health care professionals – have unique function is to assist the individual sick or well, in the performance of those activities contributing to health or its recovery that he/she would perform unaided if he/she had the necessary strength, will or knowledge. And to do this in such a way as to help him/her to gain independence as rapidly as possible (Henderson, 2010; Burggraf, 2012). Henderson further identified the key concepts of health promotion & disease prevention for nurses as assistance, individually, promotion of independence and individually & a lifespan approach where evidence based practice in nursing is the core to the evolving and emerging nursing role for the new millennium, while Schardt (2011) focusing on the importance of the role of medical librarians in recognizing good health information through two strategies : health information literacy & evidence based practice. Besides Schardt, researcher like Squellati (2010) had mentioned that HIL is vital for nurses, as poor HIL would have adverse affect on patient care. Health information professional(HIP) (Seeley, Urquhart, Hutchinson, & Pickard, 2010), as a broad heading, refers to different librarians or information professionals working in health care sectors such as medical librarian (Ata Rehman, 2012), health science librarian, (Perry, Roderer, & Assar, 2005) hospital librarian(Holst et al., 2009), clinical librarian (Lappa, 2005), informatician (Perry et al., 2005) and informationist (Cooper, 2011; Robison, Ryan, & Cooper, 2009).

Considering the changing aspect of nursing science especially through EBP along with the transformation of nursing education from vocational to academic studies (Olof Sundin, 2008) in developed and developing countries alike, researchers have been

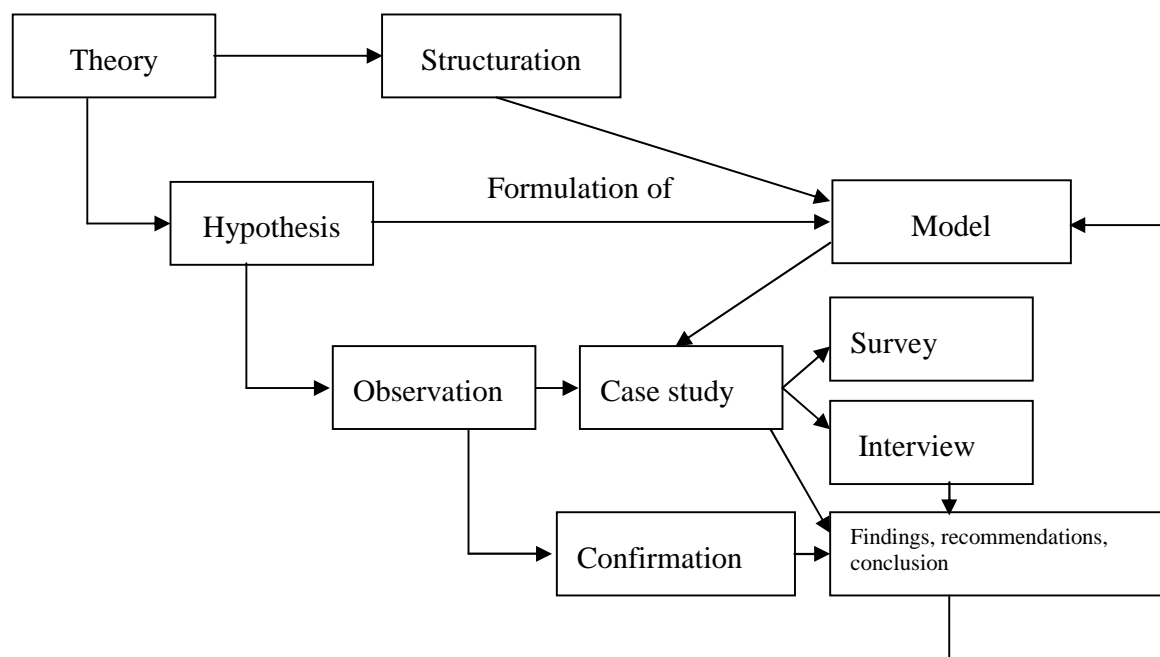
extending their lens in exploring the role of HIPs in promoting HIL towards their consumer in educational sector. Those researchers have addressed HIPs in different way as various research attempts have appeared on the scene regarding the investigation of HIPs roles with two approaches, that is what kind of roles and how those roles are being performed in the nursing domain such as developing competencies for health librarians (Seeley et al., 2010), investigating HIPs new role as informationist (Cooper, 2011; Robison et al., 2009), reviewing the roles for librarian regarding EBP in nursing (Kronenfeld et al., 2007), present and future roles for hospital librarians (Holst et al., 2009), librarians' information literacy expertise in the domain of nursing (Olof Sundin et al., 2008), evolving roles of HIP in online learning environment (Bury, Martin, & Roberts, 2006), role of clinical librarians in information-needs analysis (Lappa, 2005), roles of librarians in developing evidence based practice curricula (Klem & Weiss, 2005), and the faculty library joint collaboration in promoting HIL (Hsu,, Johnson, & Brooks, 2003; Dorner, Taylor, & Hodson-Carlton, 2001).

The findings of all those research could be summarized in a way that HIPs are playing their roles in promoting HIL towards their consumers from two aspects i.e. lower level of literacy and higher level of literacy (Lupton, 2004); the lower level refers to library instruction program along with their prototype activities in association with information seeking and finding whereas, the higher level of literacy focuses on the critical use of information, which pushes individuals belonging to top-down and bottom-up level to collaborate with HIPs in integrating or in embedding IL in nursing curricula as well as for collaborative teaching. Efforts have also come up with the concept of *informationist* (Davidoff & Florance, 2000) with a differentiate approach between the role of HIPs and the informationists or informaticians, however, most of these efforts found a huge overlapping of their roles except a few competencies, especially their qualifications.

Chapter-3: Research Approach, Model and Methodology

3.1 Research Approach

Establishing a tangible link between the role of HIP and the promotion of HIL among nurses' is little bit difficult as to certain extent the role is dependent on the domain of health care practitioners and to some extent those roles are independent or might have indirect relation in promoting HIL. Considering those difficulties, a deductive reasoning approach of the research were selected with the focus on the role of HIPs in some selected health institutes of Norway. The approach is depicted (Figure–1) in the following way in relation to the study:



Figure–1. Framework for the research approach with embedded methodology

3.2 Theoretical perspective

The *Giddens's Structuration Theory* (Giddens, 1985) on which basis the hypothesis and a model have been formulated to guide the all data collection, data analysis, discussion, findings, and the recommendation of the study, permeates this research approach. The study followed the Zheng's way of conceptualizing IL through *Structuration Theory* (Zheng, n.d.) where the concept of 'agency' is pivotal of all social changes. After getting

inspiration from that conceptualization, the study further incorporated the idea of Leckie's model for working professional (Leckie et al., 1996) as the basis of categorizing HIPs' roles. Apart from that the Lupton's (Lupton, 2004a) idea of two levels of information literacy, as all practices related to IL could be viewed from higher and lower levels, were also incorporated in the model.

3.3 Rationale of the Model

The reasons for choosing *Structuration Theory* behind the model are many. First of all, the *Structuration Theory*, through its key concepts, has been showing enough flexibility to invite other theoretical perspectives such as *Phenomenography*, *Sociocultural Theory* and *Discourse Analysis* that are being frequently used in IL research as mentioned by Limberg, Sundin, & Talja (2012).

As per the goal of the research, there are two main segments to explore i.e. nurses' HIL promotions and the HIPs' roles, where HIPs' roles are independent variables and nurses' HIL promotions are dependent variables. HIPs' roles, in spite of belonging independent variables, are active variables as it is possible to manipulate those (Hippler, 2013). Keeping these issues in mind, the different concepts that derived from structuration theory were applied in formulating the model for the whole process of the study. Apart from that, a central core of *Structuration Theory* is the '*duality of structure*' through which the HIL can be conceptualized as 'structuring properties' of a social group that has revealed in Lupton's (2004) conceptualization of 'higher level' and 'lower level' of IL. The *duality* concept also indicates that HIL exists at both social and individual levels and in the same line, HIL evolves as social practices shaped by social actors (Zheng, n.d.). As concept of duality of structure refers to different ways of conceptualizing HIL through structuration process, those elements were integrated to the both domain i.e. nursing domain and HIPs' roles domain as per their applicability in the following manner:

3.3.1 Conceptualization of HIL: nursing and HIPs' role domain

As the concept of structure refers to 'structuring properties', HIL can be conceptualized in a way of structuring properties of a social group like nurses' that enable and constrain the access, evaluation and use of information. Those also indicate that HIL exists out of 'time and space', and produced and reproduced by social systems (Zheng, n.d.; Giddens, 1985) or in or

other word, HIL is not a static entity that can be directly acquired rather, it exists both at lower and higher level. Social actors shape HIL evolving as social practices in nursing domain.

The social practices regarding HIL in nursing domain can be explored through three modalities which are three interrelated and interactive aspects of an integrated whole and each contains structural properties that are engaged in a structuration process(Zheng, n.d.). HIL, as sense making of information, indicates in the modality of the *interpretive scheme* with its most familiar connotation regarding social practices such as the collection, interpretation and communication of type of information. Through the facility modal, the social practices of HIL – appeared as institutional support of information usage – refers to the conceptualization in a way that comprise access to library resources, facilitating those access through instruction program, and ensuring them with technological facility that are within the infrastructure of the institution. The *norms* dimension of HIL is implicated in inclusion and exclusion of different types of information use and dissemination as mediated by their perceived relevance and value (Zheng, n.d.). Such conceptualization can be further summarized in the following manner (Table–3):

HIL	Modalities	Dimensions	Social Practices	Applications in nursing domain
	Interpretive scheme	Sense making of information	Collection	Specifying and decoding information need
			Interpretation	Seeking information through decoded information need
			Communication of type of information	Finding information to satisfy information need
	Facility	Institutional support for information usage	Authorization	Access to institutional library resources
			Institutionalization	Facilitating those access and usage of information through instruction program
			Technological	Ensuring them with

			support of information collection and usage	technological facility that are within the infrastructure of the institution
	Norms	Perceived relevance of value of type of information	Inclusive and exclusive practices of types of information usage	Integrating information through established rules, assessing the reliability of information sources, ethical usage of information and influence of local culture regarding information practices.

Table–3 *Conceptualization of HIL in nursing domain through three modalities of structuration theory.*

Through structuring properties in relation to nursing domain, the HIPs’ role can be viewed from two levels i.e. higher and lower. Lower level deals with the common features of HIL i.e. information seeking & finding whereas higher level emphasizes the usages of information which are often insisted on in practices of literacy education(Limberg et al., 2012). Again, HIPs’ role can be structured from the Lecki’s model of working professionals as service provider, administrative/managerial, educator, researcher and learner. As per Zheng’s conceptualization, HIL “exists out of time and space”, and produced and reproduced by social practices(Giddens, 1979). In the same line, those interdependent and interconnected roles regarding HIL promotion can also, respectively be considered/defined in terms of prototype, roles beyond prototype, newly arisen and socio-political perspectives.

3.3.2 Agency

As the concept of ‘agency’ constitutes the root of the theory, it has enough space to accommodate different agents–knowledgeable and reflexive individuals along with their acts—from the both domain: nurses’ HIL practices and HIPs’ roles that have direct or indirect impact on the role of the HIPs so as in promoting HIL among nurses. Furthermore, ‘agency’ addresses both constraints and possibilities of changes or in other

word, addresses both conditions of social environment and individual aspirations, those lead the study to figure out the problems along with potentials for changes that are embedded in or associated with both social and individual level for playing the roles of HIPs. Those constraints constitute the important part of the findings of the study whereas potentials constitute the basis for recommendations.

3.3.3 Social integration and system integration

As per ‘structuration theory’, there are two levels of social systems for its reconstitution: social integration and system integration. Social integration refers to the routinization of social practices. The other level is system integration where strategically placed agencies seek to reflexively regulate the overall conditions of system production. These indicate the need to consider the integration of bottom-up and top-down approaches. The bottom-up approach, as social integration, is grounded in homeostatic social interactions whereas top-down approaches, as system integration requires institutional actions and political processes. The concept of ‘*system integration*’ and ‘*social integration*’ can be conceptualized for this context in a way that each recommendation of the study work like an approach for *system integration* whereas the potential changes, as outcome of that *system integration*, appear as *social integration*, and in turn structural changes of HIPs’ role in promoting HIL among nurses.

3.4 Hypothesis for the model

As per ‘structuration theory’ agency is situated, it refers to the cultivation of HIL, for the both domain, in a way that must consider on the one hand, the individual attitude and aspiration and on the other hand, conditions of the social environment. Norway, as belonging in developed countries or, as one of the most developed countries in the world, has well-established social infrastructure and environment. However, in spite of belonging in developed countries, agencies require to act reflexively, especially at individual level where HIL practices might vary to certain extent, in the integration of systems that comes from the reciprocity between actors or collectivities across extended time space (Giddens, 1985)

It is expected that the social environment of Norway have enough potentiality and flexibility in integrating new system as social practices. Each recommendation addressing the both top-down and bottom-up approaches, would work as system integration and in turn appear as social practices through social integration. Furthermore, as agency refers not to the intentions people have in doing things but their capability of doing things in the first place(Giddens, 1985), the agencies appearing in HIPs' domain, in relation to the promotion of HIL practices among nurses, might be situated at individual level or to say, institutional level that would have consequences for structural changes in another context or for another institutions.

3.4.1 Proposed model for the study

All those concepts, as mentioned earlier in the *theoretical perspective* section of the study, along with the hypothesis have forced the study to formulate a model showing collectively the way from data collection to conclusion through justifying the model, which have reflected in the Figure–2.

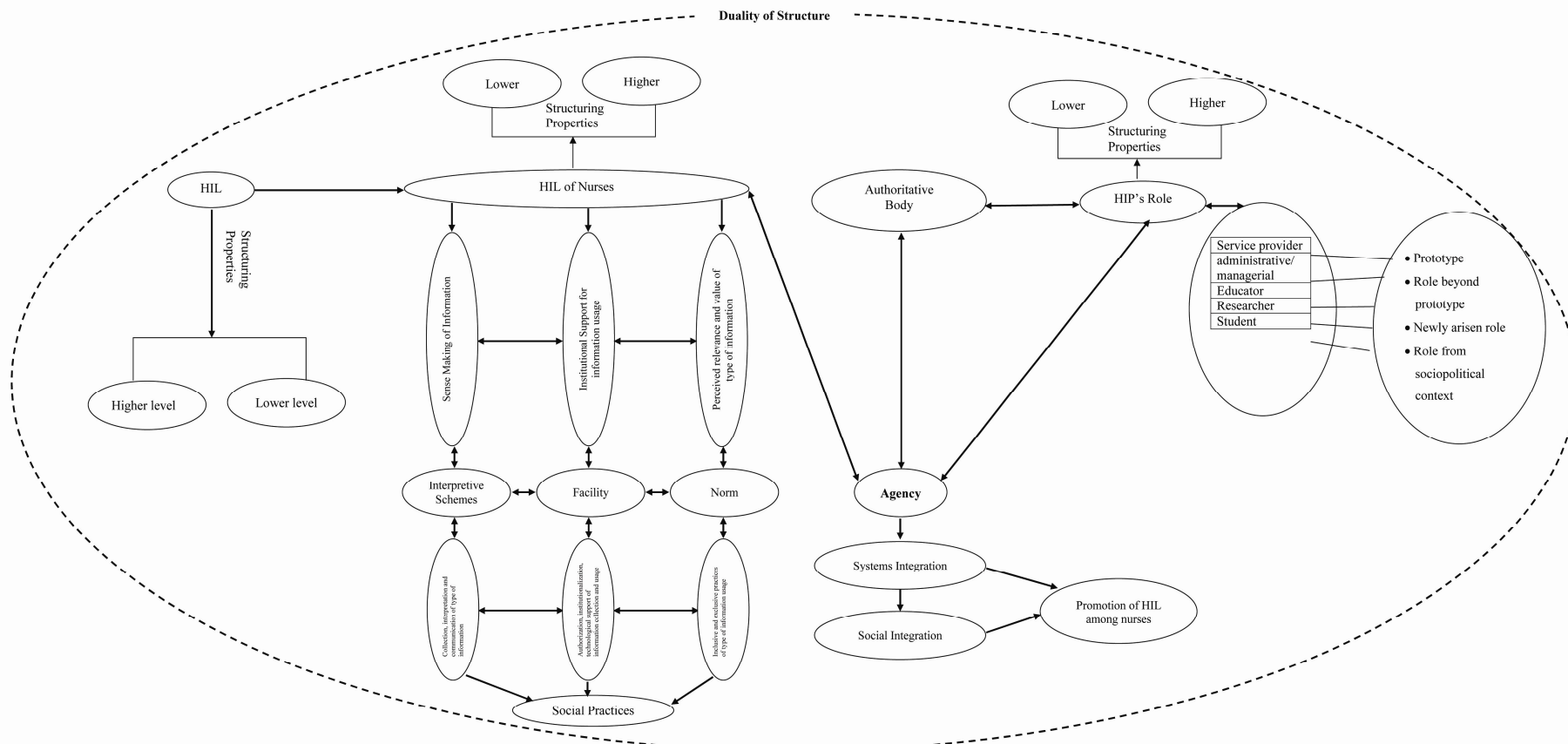


Figure-2. Model for the role of HIPs in promoting HIL among nurses

3.5 Methodology of the study

As the model suggests for gathering the perspectives of multiple stakeholders that affect on the identified condition and therefore having multiple sources of data to get an overall perspective on key issues or recommendations, a case study design was chosen to explore the research objectives through the understanding of complex relationship between factors as they operate within a particular social setting (Denscombe, 2007). A case study is also effective to produce holistic account of the case and in depth knowledge of the specifics through rich descriptions situated in context (Pickard, 2007). Apart from that, the case study design allows integrating mixed and multiple methods for data collection, which provides richer and more comprehensive data from different perspectives to draw conclusions and make recommendations (K. K. Burns & Jensen, 2012). Keeping all those considerations in mind, compatible research methods, in relation to the nature of the study, have embedded in the case study design along with different data collection tools and techniques that best fit to each method.

3.5.1 Survey through questionnaire techniques

Since surveys are effective to produce attitudes, opinions, motives, cause and effect relationships etc. of a population, two separate sets of questionnaires were prepared as survey instrument for collecting data from two groups of people: HIPs and Nurses with both descriptive and explanatory survey approach (R. B. Burns, 2000). The first group consists of four purposively selected HIPs from four specific Health Institutes in Norway, while the second group (n=13) purposively comprises nurses with their volunteer participations from different levels – student nurses, advanced nurses and working professionals – at two specific institutes among the four selected institutes.

3.5.1.1 Questionnaire for HIPs

The survey for the selected HIPs has conducted through sending a semi-structured questionnaire via e-mail to each participant. The questionnaire was prepared mostly based on qualitative approach of the research except a very little portion of quantitative data regarding their demographic information such as age and service length. Apart from the

demographic information, the rest portion of the questionnaire collects information about the roles of HIPs from five perspectives: service provider, administrative/managerial, researcher, educator and learner(Leckie et al., 1996) in relation to nursing domain. The questionnaire also collects information regarding the embedded problems in performing their roles. Keeping those five roles as pivotal of the questionnaire, some other questions regarding problems and their views about potentials have been included according to the nature of their working position and place.

3.5.1.2 Questionnaire for Nurses

Another survey was conducted at two health institutes for nurses as volunteer participator through online questionnaire, which comprises two main sections in relation to the initial objective of the study. The first section collectively represents the awareness status of the nurses and the last portion collects information about their (nurses') opinion and views regarding the importance and further improvement of HIL through the role of HIPs.

3.6 Interview

The research employed a guided semi-structured interview technique. The key informant interview was selected along with the survey as the data gathering technique for the study. The value of the interview process lay in the different perspectives and perceptions(Robison et al., 2009) that four key informants provided. The interview guide contains a predetermined set of questions, but it was possible to reorder those questions during the interview or to generate follow-up questions to probe beyond initial responses to the defined interview. The focuses of those predetermined questions were all about the roles from five perspectives, as mentioned in the earlier segment of the methodology, either from specific or broader sphere. The interviews were conducted to gain more in-depth knowledge of HIP's roles integrating different aspects, such as *prototype role*, *role beyond prototype activities*, *newly emerged role in the digital era* and *role from the particular socio-political context*, to each role that have arisen from the literature review. Apart from that the interviews had also focused on the embedded constrains and possibilities with each role, affect of internal and external factors to each role and

informant's views regarding the way out for facing the constraints and challenges smoothly.

Four HIPs were purposefully selected as key informants after asking permission, which was gained in all cases, interviews were recorded with a digital voice recorder. The informants were asked later while transcribing interviews for any kind of misunderstanding or misleading from both sides i.e. between interviewer and interviewee

3.7 Data Analysis

The data analysis utilizes the model (Figure – 2) as proposed earlier. The research objectives were explored through different questions by using *who*, *what* and *whom approach*, where gathered data from questionnaire and from interviews were utilized for data analysis process against each research question. Suitable computing program was used for analyzing data from the questionnaire. As the quality of the original interviews determines the quality of the subsequent analysis and findings (Wang, 2010), the study had followed the criteria suggested by Kvale (2007).

3.8 Ethical considerations

The both authority – HiOA for conducting the proposed research and the health care institutes that are within the scope of the case study – approved the study to collect data through survey and interview. Participation was voluntary and the survey was very anonymous as well as the participant's interviews while introducing the subjects for data analysis/interview analysis.

Chapter-4: Data Analysis, Discussion and Findings

4.1 Data analysis and discussion

4.1.1 Objective-1: To know the awareness status of HIL among the nurses.

To fulfill the objective properly an effort has made, by using who, what and how approach, to break down the objective in the following questions:

- i. Who are the respondents of the study?
- ii. What is about their awareness status regarding HIL?
- iii. How do the respondents express their views in relation to the improvement of their HIL?

4.1.1.1 Question i. Who are the respondents of the study?

As per the objective – 1, the study selected nurses as respondents (n=13) from Norwegian context. The analysis of the study in this regard was attributed by the age, qualification and designation of the 13 respondents.

Respondents	Age Group			Total	Grand Total
	Over 30	25-30	20-25		
Advanced Nursing Student	5	1		6	13
Professionals	3			3	
Nursing Student		2	2	4	

Table-4 Characteristics of the respondents from nursing.

Table-4 shows that 6 advanced nursing students as respondents constituted the majority, followed by the 4 respondents as nursing students. Rest of the respondents (3) was from working professionals.

Low rate of participation from the comparatively younger age of respondents along with the empty participation of the youngest respondents might cause the missing of agents regarding the usage of modern technology and technological devices. However, it is not certain that the respondents, comparatively less younger, belonging below 40 years of age have a huge gap in this regard rather, agents might come from their expertise through their expression of awareness status. Such agents will work for motivating HIPs to be compatible to play with their (HIPs) roles to satisfy the demands of the nurses.

4.1.1.2 Question ii. What about the awareness status of respondents regarding HIL?

To know the awareness status of the respondents several variables were fixated against the top indicator i.e. *awareness* along with indicators. All those variables collectively represent the awareness status of the respondents. The following table is the indicative of data analysis process in this regard:

Top indicator	Associate indicators	
Awareness	Conceptual status	Variables
		<i>Concept about</i> <ul style="list-style-type: none"> - Information Literacy (IL) - Health Information Literacy (HIL)
	Familiarity	<i>Familiar with</i> <ul style="list-style-type: none"> - type of information sources - the rules for drawing up systematic review of scientific publication - the rules governing the creation of bibliographic databases and problems of searching in these databases - the rules for writing scientific publications
	Ability	<i>Ability to</i> <ul style="list-style-type: none"> - find publications on a specific topic dealing with nursing issues by using different well-known databases in this field - conduct the EBP in an efficient manner - assess the reliability of the sources of information - understand the need for

		<p>specialized training of information workforce in nursing domain</p> <p>- find information on a specific topic on the website of the WHO</p>
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Table-5 Indication for the analysis of awareness status of the respondents (nurses')

4.1.1.2.1 Conceptual status:

	9	8	2	1	0
Concept about IL	A set of competencies to recognize needs for information, and have the ability to locate, evaluate, and use the needed information effectively	An important attribute in achieving lifelong learning, because it contributes to informed decisions based on critical reasoning and thinking	IL as primary generic skills embedded in courses and programs of various subject domains	Informed learning or Meta learning	Do you have any other concept in this regard? (Please mention)
	2	13	2	0	
Concept about HIL	Skills related to (i) use of health care services, (ii) health outcomes, (iii) costs of health care, and (iv) disparities in health outcomes or health care service use	A set of abilities needed to: recognize health information need; identify likely information sources and use them to retrieve relevant information; assess the quality of the information and its applicability to a specific situation; and analyze, understand, and use the information to make good health decisions	As a process of being empowered in relation to various information practices in nursing domain	Do you have any other concept in this regard? (Please mention)	-

Table-6 Conceptual status of the nurses

Table–6. Shows that the participation of respondents was simultaneously identified with more than one concept regarding IL and HIL. However, volunteer participation in expressing their individual views regarding the concept about the *IL* and *HIL* is very absent. It is evident from the table that 9 and 13 respondents, respectively, did believe IL and HIL, as a set of competencies or abilities. Interestingly 8 of the respondents were expressed their concept of IL as to become life long learner whereas only 2 respondents were expressing their views in relation to the concept of being self-empowered regarding information practices in nursing domain. Lower numbers of responses were also observed in different concepts of IL and HIL like generic skills (2), skills related to the use of health care services (2) and informed learning or Meta learning (1).

The variation in the presence of the respondents to the concepts of IL and HIL, were revealed in some extent bit contradictory, as they have expressed their responses in different proportions with the similar concepts belonging to IL and HIL. These are the indications of their vulnerability at conceptual level regarding IL and HIL and eventually, there are very low responses at different conceptual levels along with the absence of responses from their personal views.

4.1.1.2 Familiarity

There are some arguments regarding the types of sources of information as those types have been considered simultaneously formal or informal depending on context (Kaye, 1995). The study has tried to categorize the sources of information in the most logical way those are common in almost all-academic disciplines, however, except formal and informal sources of information, the rest of them might belong to those two broad categories.

It is evident from the Table–7 that 5 of the respondents consult online databases in executing their professional activities, while another 3 of the respondents report regarding the consultation of face-to-face sources of information. Respectively two of the respondents were equally participated in the formal and others category of information sources.

Question indicating the familiarity of information sources	Formal	Informal	Face to face	Online database	Others
What information sources you usually consult for performing your professional activities?	2	1	3	5	2

Table–7 *Familiarity with the types of information sources among nurses*

The highest number of participation of the respondents (5) in consulting online databases is an indicative of their ‘IT savvy’ nature where the number of respondents is not at satisfactory level. The comparatively lower and lowest presences in rest of the categories are an indicative of the fact that they are not properly familiar with different types of information sources they have been consulting.

Table–7 indicates that not a single respondent strongly disagreed with the familiarity of the information resources and rules for writing scientific literature, while lowest response (1) came out regarding the disagree with the familiarity of important information resources in the field of public health, rules for drawing up a systematic review and the rules for writing scientific publication. There is also absence of respondents who disagree regarding the familiarity of web portals and information directories in health care along with the rules governing in the creation of bibliographic databases.

Familiarity status indicators	I strongly disagree	I disagree	I neither agree nor disagree	I Agree	I strongly agree
I know the web portals and information directories in health care	0	0	2	7	4
I can get to the information resources provided by the most important ones in the field of public health	0	1	0	8	4
I understand the rules for drawing up a systematic review of scientific publications	0	1	2	3	7

I understand the rules governing the creation of bibliographic databases and the resulting principles and problems of searching in these databases	0	0	5	4	4
I know the rules for writing scientific publications	0	1	2	5	5

Table–8 *Familiarity status of information resources and rules for writing scientific literature*

The highest number (8) of respondents agreed with their familiarity of the information resources provided in the field of public health, followed by the 7 of the respondents, who expressed their strong familiarity with the rules for drawing up a systematic review for scientific publication and the equal respondents agreed with their familiarity of web portals and information directories in health care. Table–8 also points out that equally, 5 of the respondents were very much familiar and familiar with writing scientific publications respectively, while the same number of respondents was neither agree nor disagree with the familiarity of the rules governing in the creation of bibliographic databases. Also comparatively lower but equal responses (4) were observed in relation to the strong familiarity of web portals and information directories in health care, information resources provided by the most important ones in the filed of public health, and the rules governing in the creation of bibliographic databases, while the same number of respondents were not very much familiar with but familiar with the rules governing in the creation of bibliographic databases. Lower numbers of respondents (2) were equally expressed their lack of confidence respectively in the familiarity of web portals and directories in the field of health care, rules for drawing up a systematic review of scientific publication, and the rules for writing scientific publications.

The study reveals the confidence level of the respondents through the variations regarding their familiarity status of information resources and the rules for writing scientific publications. Majority, majority of the respondents were confident about low-level of literacy through their familiarity of important information sources in the field of public health, while slightly more than half of the respondents constitute a group who are very much confident of high level of literacy regarding the rules for writing scientific publications along with the low level of literacy from another perspective i.e. familiarity

of web portals and information directories in health care. Only 5 respondents were very much confident about the rules for writing scientific publication, while the equal numbers were not having—even low level of—literacy from another perspective. A little portion of respondents were more or less confident, while few were not confident regarding the familiarity of both, low and high, level of literacy. All these collectively report that the familiarity level of nurses of the selected institutes is satisfactory due to majority of the participants came from advanced nursing students along with working professionals but not highly, as there were some inconsistencies regarding the familiarity of higher and lower level of literacy that could hinder their effort in building them as life long learner. However, most of the nurses’ are familiar, in spite of at least level, with different important information resources and rules for writing scientific literature, which is a potential.

4.1.1.2.3 Ability

The ability regarding HIL among nurses focuses on the self-assessment regarding the capability of applying their literacy skills in decision-making situation. According to table–9, no one was strongly agreed with their inability of finding, assessing and applying information for decision-making situation, and of understanding the need for improving such capabilities. Almost the same picture was existed in agreed state regarding the inability of capabilities as mentioned earlier except lowest response (1) in conducting EBP, and in assessing the reliability of information sources.

Ability status indicators	I strongly disagree	I neither agree nor disagree	I strongly agree	I disagree	Agree
I can find publications on a specific topic dealing with nursing issues in health care sectors by using different databases such as : CINAHL, Medline, Cochrane, Library etc	0	1	8	0	4
I can conduct the evidence based practice in an efficient manner	0	2	3	1	7
I can assess whether the source of information (e.g. journal, institution websites) is a reliable	0	2	5	1	5

source					
I understand the need for specialized training of information work force in nursing domain	0	0	6	0	7
I can find information on a specific topic on the website the WHO	0	5	2	0	6

Table–9: *Ability regarding health information literacy among nurses*

8 of the respondents were strongly agreed with their ability to find publications dealing with nursing issues by using different familiar databases in health care sector followed by the 7 of the respondents respectively, who were agreed, but not strongly, about their ability of conducting EBP and understanding the need for further improvement of their ability through training. 6 of the respondents expressed their strong ability to realize the need for specialized training of information workforce in nursing domain, while the same numbers of respondents were agreed with their ability to find information on a specific topic on the website of the WHO. 5 of the respondents expressed their ability status with more, less and without confidence in evaluating the reliability of information sources respectively, while 4 of the respondents were agreed with their ability of finding publications dealing with nursing issue by using familiar databases. 3 of the respondents came with positive attitude regarding their strong ability in conducting EBP with efficient manner while 2 of the respondents expressed their strong ability in finding information on a specific topic. Another 2 of the respondents, respectively, were not confident enough regarding their ability of conducting EBP, and of assessing the reliability of information sources

The whole picture suggests the study, from the context of the selected health institutes that nurses having the awareness regarding their ability of lower level of literacy is belonging to mid level of satisfaction, whereas the strong confidence regarding the ability for conducting EBP or the capability of higher-level of literacy is at low level of satisfaction. Lower, but considerable, amount of respondents do not have confidence in some particular context of ability. All those variations have relation to the nature of participant nurses as majority of the advanced nursing students and working professionals were have participated with positive attitude, especially regarding their ability status of higher-level of literacy, whereas the undergraduate nursing students are behind of them in this case.

<i>Views of the respondents (nurses') regarding the promotion of HIL</i>	<i>Agency</i>	<i>Supporting skills and services for nurses</i>	<i>Roles for the HIPs</i>
Demanding more evidence based information in Norwegian Languages	Initiatives for providing translation services in indigenous language	Language skills	Translation service
Asking for HIPs contribution in motivating nurses by their (HIPs) research activities containing new thoughts that help them to fulfill their information need by reaching to more HIPs from wide perspectives.	Motivation for publishing scholarly literature containing new thoughts in fulfilling information need	Current awareness service regarding new thoughts and modern trends in health information service	Act as a researcher
Asking for more information about how to write, what to write and who should write research papers.	Motivation in finding research question in relation to different specialized filed where scopes are available for nurses at different levels	Keep abreast of modern research trends in different specialized field of nursing	<i>collaborator with nursing faculty and act as learning facilitator</i>
Asking for the active participation in different forums or platforms dealing with information practice issues in health care professions	Initiatives for up-keeping dialogues among health care practitioners	To be informed about problems that comes from granular level of health care issues	<i>Active participator in nursing community of practices</i>
Asking for the motivation of higher authorities	Making liaison with individuals in the authority with a bottom-up approach	Ensure better learning and working environment through giving HIL among nurses as one of top priorities.	Working as <i>liaison officer</i> with the authoritative body for promoting HIL among nurses.

Table–10 *The role of HIPs as per the Nurses' views in relation to the improvement of HIL*

As per table–10 nurses were expressing their views regarding the improvement of their HIL through the role of HIPs that generate the several roles for the HIPs among which, *active participator in nursing community of practice* and *liaison maintainer with authoritative body* sounds apparently new than other roles.

4.1.2 Objective–2: *To examine the activities and initiatives those have been conducted and taken by the HIPs in promoting literacy skills of nurses.*

The objective has broken down in the following questions by applying the same approach as used for objective–1.

- i) Who are responsible in conducting activities and for taking initiatives?
- ii) What activities do HIPs conduct in promoting HIL through applying their skills?
- iii) How those activities are being performed in relation to the promotion of HIL at nursing domain?

4.1.2.1 Question–i. Who are responsible in conducting activities and for taking initiatives?

As the nature and scope of HIPs roles are closely connected or affected by the institutional practices, or in other sense, the institutional nature, activities and the community they serve, it is important to consider institutional acquaintance along with HIPs that are within the scope of the study.

Health Institutes			
Work Place ID	Nature of the Institute	Activities	Consumer / Focus Group
A ₁	Academic	Offering bachelor degree, Master degree and PhD program in nursing	Nurses— Learners, working professionals and researchers
A ₂	Academic	Offering education for nurses at bachelor level and at specialized level	Nurses— Learners and working professionals
A ₃	National agent / body	Providing electronic information regarding health services to all Norwegian health institutes	All health Institutes
A ₄	Health care	Providing services to both health care practitioners and learners	Health care practitioners and learners

Table–11 *Acquaintance with the Health Institutes of the study*

Table–11 reveals that out of four institutes two (A₁ & A₂) are academic in nature which specifically deal with nursing education while A₄, which is a hospital library, covering a wide range of health care practitioners including nurses. The rest one (A₃) is working like an apex body for all health institutes in Norway through providing health care information services electronically, therefore, it has a broader impact on nursing domain regarding their promotion of HIL.

Health Information Professionals						
ID #	Educational qualification	Gender	Age range	Title	Working experience	ID# Work Place
I ₁	Master degree in LIS	Female	41-50	Contact Librarian / subject librarian	5 years	A ₁
I ₂	Cand. Scient Physiology	Female	51-60	Head librarian	14 years	A ₂
I ₃	Bachelor in LIS	Female	Over 60	Research librarian	7 years	A ₃
I ₄	Bachelor in LIS	Female	31-40	Information professional	7 years	A ₄

Table-12 Informants' characteristics

As per table-12, out of four informants, one (I₂) informant had a background from medical science along with LIS background. Rest of them has a pure background in Library and Information Science, while I₁ had a Master degree in LIS. All informants are female working as a HIP in different positions such as contact librarian/subject librarian (I₁), head librarian (I₂), research librarian (I₃) and information professional (I₄). Most of them had a work experience of five years or more than that, even someone (I₂) had more than ten years. However, it is important to consider that most of them had a versatile working experiences as HIP at different health institutes in Norway whereas, the table – 4 shows the service length of each informant only with their current positions at different working institutes respectively.

4.1.2.2 Question–ii. What activities do HIPs conduct in promoting HIL among nurses?

To figure out the answer of this question, *top indicators, indicators, aspects of each indicator as categorizations, and the variables from coding* to put in the *categories* in relation to each *indicator* while analyzing interviews, were fixated in the following manner (Table –13):

Top Indicators	Indicators	Aspects/Categorizations	
		Higher Level	Lower Level
Roles	Prototype	Variables from coding	Variables from coding
	Roles Beyond Prototype		
	Newly Arisen		
	Socio-political		

Table–13 Indication for analyzing HIPs' roles

It is important to mention here that the table – 8 indicating the HIPs’ roles in relation to the promotion of HIL among nurses are interactive in nature and interdependent with each other. For example, managing translated version of MeSH is a *managerial role* whereas, providing translated version of MeSH is a *service provider role*. This kind of issues sounds like the roles are somewhere bit overlapping with each other or rather to say, those roles are very closely connected with each other. Keeping these issues in mind HIPs’ roles were carefully structured into several types.

Top Indicators	Indicators	Categorizations	
		Higher Level	Lower Level
Service Provider	Prototype		Desk guidance (I ₁ +I ₃ +I ₄); Cataloging & Classification (I ₂); Shelving curricular books separately (I ₂); Borrowing and buying facilities (I ₂); Providing library instruction program (I ₁);
	Roles Beyond Prototype	Inviting papers (I ₁); Decoding of information specifically (I ₄); Providing courses on information resources (I ₃);	Providing special collection for nurses in e-resources (I ₃); Collaborating in HIP faculty join acquisition (I ₂); Allowing off campus access (I ₂); Keeping aware of copyright, Marketing of library resources (I ₂);
	Newly Arisen	Drop-in-service (I ₁ +I ₄); Learning management system based library service marketing (I ₁ +I ₄); Making special website for nurses (I ₃); Making of best clinical procedure for nurses (I ₃); Providing resources for evidence based practice (I ₃); Making mobile application for nurses (I ₃).	Patient records & patient journal searching (I ₁); Youtube based tutorial for searching different databases (I ₁ +I ₃); Keeping aware of library resources through web & listserv (I ₃ +I ₄).
	Socio-political	Archiving procedures & policy for HeRA repository (I ₃)	Translating MeSH in Norwegian language (I ₃).

Table–14 Analysis of HIPs’ role as service provider

Table–14 indicates how the informants from different institutes were engaged in the service provider role. The prototype aspect of service provider role comprises desk guidance, cataloguing & classification, shelving curricular books separately, borrowing &

buying facilities and library orientation program. As all these roles are indicating the activities regarding information seeking and finding, they were placed in the lower level of HIL. The role beyond prototype aspect, from the point of view of higher level of literacy, includes inviting papers from the nurses, decoding nurses' information need, and providing courses on information resources. Again the role beyond prototype aspect, in relation to the lower level of literacy, points out the roles concerned with providing special collection for nurses in e-resources, collaborating in HIP-faculty joint acquisition, facilitating off-campus access, keeping aware of copyright, and marketing of library resources. Newly arisen role, from the service provider point of view, includes drop-in-service, library service marketing through learning management system, making special website for nurses, making best clinical procedure for nurses, providing resources for evidence based practice, and making mobile application for nurses. As almost all these roles are concerned with the usages of information, they were placed in the category of higher level of literacy activities. Whereas, patient records & patient journals searching, Youtube based tutorial for searching different databases and keeping aware of library resources through web & list-serve were placed in the category of lower level literacy activities as the newly arisen aspect of service provider role. The sociopolitical aspect in this regard points out the both higher and lower level of literacy that had been emerged by the Norwegian context. In this section, the higher level comprises the archiving procedures and policy for HeRA (Helsebiblioteket's Research Archive) repository while the lower level figures out the activity relating to the MeSH (Medical Subject Headings) translation in Norwegian language.

Table-14 further points out that the different informants, as indicated by their ID, working in their respective institutes were engaged as service provider in a way where the presence of their activities were not seen equally or, were not always similar among all institutes in relation to HIL promotion among nurses. These indicate, to some extent, the existence of differences in institutional nature and practices where they were working with. In addition, their scope of responsibilities and working positions were also responsible in making such differences. However, all those activities, by integration different aspects, collectively constitute the HIPs' role as service provider in relation to HIL promotion among nurses.

Top Indicators	Indicators	Categorization	
		Higher Level	Lower Level
Administrative/ Managerial	Prototype	Evaluating library services through survey (I ₁); Making decision & negotiation (I ₁);	Developing collection (I ₁ +I ₂), Distributing responsibilities (I ₁); Managing & paying for several databases (I ₁); Making budgetary allocation report (I ₁); Keeping statistics of library usage (I ₁ +I ₂ +I ₃ +I ₄); Monitoring library activities (I ₂); Administering access to library resources (I ₄)
	Roles Beyond Prototype	Working as a project leader (I ₃); Conducting training program (I ₁); Conducting meeting with top-down and bottom-up level (I ₁); Collaborating & coordinating at multiple levels (I ₁); Collaborating in discussion; Taking part in professional association (I ₂); Hiring people, educating them, & writing articles in web & in journals about the project (I ₃).	Managing e-resources. (I ₃)
	Newly Arisen Roles	Integrating HIL in nursing curricula (I ₁); Integrating tailored fashion HIL in special nursing education (I ₁); Collaborating in counseling at practice placement(I ₁); Participating in consortium (I ₁ +I ₄); Making decision in improving HIL with a special focus on researchers (I ₁); Networking with other HIP (I ₃); Promoting open	Organizing workshop for searching in databases. (I ₁ +I ₃),

		access. (I ₃)	
	Socio-political	Rethinking in counseling & teaching derived from strongly focused EBP area in Norway (I ₁); Collecting all clinical procedures & databases to make into the best one (I ₃); Organizing conferences and seminars initiated by SMH (I ₂ +I ₃ +I ₄)	Providing access facilities to NEHL's databases (I ₂).

Table–15 *Analysis of HIPs' role as Administrative/Managerial*

According to table–15, the higher-level category of prototype administrative/ managerial role includes survey regarding library service evaluation, and decision-making through negotiation at different levels. The lower level contains collection development, responsibility distribution among other team members of HIPs, acquisition and purchase of databases dealing with nursing issues, preparation of budgetary allocation report for teaching and recruiting library staff for nursing education, maintenance of library usage statistics, library activity monitoring, and control of access to library resources.

Activities regarding higher level of literacy were figured out in terms of beyond prototype roles in a way that includes working as project leader, conducting training program, participating in different meetings at top-down & bottom-up levels, collaboration and coordination at multiple levels existing in top-down & bottom-up levels, working as a member in different professional associations, and writing articles in web and in journals about different project. The lower level in this regard incorporates the management of e-resources.

The newly arisen aspect of administrative/managerial role comprises activities such as integrating HIL in the nursing curricula, integrating HIL in a tailored fashion at higher/advanced level, collaborating in counseling at practice placement, participating in different consortium, making collaborative decision for inclusion or exclusion of any topic regarding HIL, making decision in improving HIL with special focus on researchers, networking with other HIPs and promoting open access (OA). These roles mostly refer to the practices of HIL education, which were the basic for categorizing those as roles from higher level of literacy. Code was found for the lower level of the literacy in terms of newly arisen role as organizing workshop for searching in databases. The sociopolitical contexts in this regard were emphasizing the Norwegian context, which

indicates rethinking in counseling and teaching derived from strongly focused area i.e. EBP in Norway; collecting all clinical procedures and databases to make into the best one for nurses working at different levels; and organizing conferences and seminars initiated by SMH. The code considering lower level of literacy regarding the role from socio-political context contains the provision of access facility to NEHL's databases.

The tables–15 also the indicative of facts that the administrative/managerial roles of HIPs collectively reveal as roles with hidden nature(Anderson, 1989;Cooper, 2011) in relation to the HIL promotion among nurses. In addition, table–15 shows that the informants holding ID no. I₁ and I₃ were enriching this segment with their statement while giving interview. These were possible due to their institutional dynamics as well as for their working position.

Top Indicators	Indicators	Aspects/Categorization	
		Higher Level	Lower Level
Educator	Prototype	Teaching with pedagogical approach, (I ₁ +I ₂).	Motivating & encouraging with literature searching (I ₁) ; Showing systematic search from database(I ₁)
	Roles Beyond Prototype	Collaborating in teaching through faculty HIP join collaboration/program (I ₁); Taking part as a specialized project member (I ₁ +I ₃); Providing the meaning of peer reviewed (I ₁); Anticipating the nurses information need (I ₃).	Systematic deeper search from databases (I ₁)
	Newly Arisen	Integrating HIL training program (I ₁); Building efficiency in conducting EBP (I ₁); Making compatible for practice placement (I ₁); Systematic literature review (I ₁); Systematic research through meta-learning approach (I ₁); Supervising cross-collaboratively by using web 2.0 tools (I ₁); Drop in counseling service (I ₁); Teaching reference management by using reference management software (I ₁ +I ₂); Teaching EBP by using PICO model (I ₂); Offering courses on critical appraisal of EBP (meta research) (I ₄); Participating actively in community of practice of HIPs (I ₁).	
	Socio-political	Teaching the usages regarding the resources of NEHL (Helsebibioteket) (I ₂).	Library instruction program in finding the resources of NEHL (Helsebibioteket) (I ₂).

Table–16 Analysis of HIPs' role as Educator

Table–16 reveals that the prototype roles of HIPs as an educator comprises the role from point of view of higher-level literacy activities as teaching with pedagogical approach, while lower level includes the motivation and encouragement in relation to literature search, and showing the way of systematic search from databases. Codes were found in the segment of ‘roles beyond prototype’ regarding higher level of literacy activities as collaborating in teaching through faculty-HIP joined collaboration program, taking part as a specialized project member, providing the meaning of peer reviewed, and anticipating nurses information need to give support in the best way when they are ready to be motivated for those information. The lower level in this regard includes systematic deeper search from databases. In the newly arisen sector of educators roles were coded in the category of higher level of literacy activities that include integrating HIL training program, building efficiency in conducting EBP, making nurses compatible for their practice placement, systematic literature review, systematic research through meta learning approach, cross collaborative supervision by using web 2.0 tools, drop-in counseling service, teaching reference management by using reference management software, teaching EBP by using PICO model, offering courses on critical appraisal of EBP, and participating actively in HIPs’ community of practices. Codes were identified in relation to the sociopolitical context, which contains the teaching activities regarding usages of NEHL’s resources as literacy activity from higher level whereas, library instruction program in finding the resources of NEHL was belonging at lower level.

As per table–16, it is evident that most of the activities concerning the role of HIPs from the educator point of view belonging to the higher level of literacy activities as HIL education was the prime focus in this regard. Due to the nature of working position and responsibilities, informants from institute A₁ (I₁) and A₂ (I₂) were mostly appeared in this regard. Cross-collaborative supervision, among all other roles, by using web 2.0 tools sounds apparently new and unique role in this regard.

Top Indicators	Indicators	Aspects/Categorization	
		Higher Level	Lower Level
Researcher	Prototype	Assisting research group (I ₁); Participating in research project (I ₁).	
	Roles Beyond Prototype	Publishing scholarly articles (I ₁ +I ₃); Participating collaboratively with research group (I ₁); Participating in new digital tools development team. (I ₁)	
	Newly Arisen	Motivating & encouraging to use more research articles & literature (I ₁ +I ₄); Publishing research articles in international forum (I ₁); Making research on evidence based library & information practice to figure out the high quality decision process in the field of library & information science (I ₃); Searching literature to make best clinical procedure (I ₄)	
	Socio-political	Publishing scholarly literature regarding health information service for Norwegian context (I ₃); Taking part as a contributor in conferences & seminars organized by Norwegian library association. (I ₂ +I ₃ +I ₄)	

Table–17 Analysis of HIPs’ role as Researcher

Table –17 shows that assisting research group and participating in research project were found as prototype roles in higher-level category of HIP’s roles as researcher. Again, the higher-level activities were coded as publishing scholarly articles, participating collaboratively with research groups, and participating in ‘new digital tools development team’, which belong to ‘beyond prototype roles’ of HIPs as researcher. The HIP’s newly arisen roles as researcher were coded, from the point of view of higher level of activities, as motivating and encouraging nurses to use more research articles & literatures; publishing research articles in international forum; making research on evidence based

library & information practice to figure out the high quality decision process for health care library & information centers; and searching literature in making best clinical procedure for nurses. HIPs' roles as researcher from Norwegian context were coded as publishing scholarly literature regarding health information service from Norwegian perspective; and taking part as a contributor in conferences & seminars organized by the Norwegian library association. As research refers to the synthesizing information to build new knowledge, and to use of information in creating new knowledge (C.S. Bruce, 1997), the role of HIPs as researcher belong to higher level of activities in relation to the promotion of HIL among nurses. However, these efforts of HIPs, as researcher, support the both level of HIL, i.e. higher and lower, in nursing domain.

Top Indicators	Indicators	Aspects/Categorization	
		Higher Level	Lower Level
Student/ Learner	Prototype	Learning & understanding the working environment of nurses (I ₁ +I ₂ +I ₃ +I ₄),	Learning about new information resources. (I ₃).
	Roles Beyond	Attending courses dealing with new issues in health information services (I ₂).	
	Newly Arisen	Taking part as learners in various workshops seminars & conferences (I ₁ +I ₃).	
	Socio-political	Attending courses offered by Norwegian special group of medical & health librarian (I ₂).	Attending courses offered by CRIS _{tin} (I ₂)

Table – 18 Analysis of HIPs' role as Student/Learner

Table–18 shows that the prototype aspect of learner role includes learning and understanding of working environments of nurses, which constitutes the higher level of activities regarding HIL promotion. The lower level in this regard refers to learning about new information resources. Attending courses dealing with new issues in health information services was coded as higher-level category in constituting the 'beyond prototype role'. The code regarding the newly arisen aspect of the role was considered as 'taking part as learners in various workshops, seminars & conferences', which belong to higher-level category. The higher-level category of sociopolitical context comprises the code as attending courses offered by Norwegian special group of medical & health

librarian, while ‘attending courses offered by *CRISlin*’ was coded as lower level of activity regarding HIL promotion.

Table–18 is also an indicative of the fact that the HIPs’ roles in this regard would have indirect impact in promoting HIL among nurses as through the learning activities the HIPs can make themselves more compatible to serve nurses in an effective and efficient manner.

4.1.2.3 Question– iii How those activities are being performed in relation to the promotion of HIL in nursing domain?

Sundin(2008) pointed out that the HIPs’ “expertise is not seen as stable and fixed, but as always negotiated and in a state of continuous movement and change”. Sundin’s view further support the concept of structuration theory in relation to HIPs’ role, from the perspective of HIL promotion among nurses in a way that HIPs’ role is not a static entity, rather it changes with time and space. In the same line, HIP’s roles as diverse, multifunctional, and objective(Seeley et al., 2010), were figured out through key informants’ interviews. Several major roles in relation to the promotion of HIL, either directly or indirectly, were identified as project leader; collaborator; motivator; coordinator; marketer; teammate; educator; counselor; decision maker; facilitator; supervisor; contributor; and participator.

HIPs as project leader:

The role of HIPs as a project leader was found through the position of leader in HeRA and MeSH project. In HeRA project, the HIPs are working to free access of Norwegian electronic health libraries open research archive for hospitals and other health institutions in Norway. As the main objective of HeRA is to make participating institutions research publications freely and easily accessible to the public worldwide through open access on the Internet, HIPs are playing a crucial role from broader perspective in promoting HIL for healthcare professionals including nurses through the position of project leader. As there is no Norwegian standardized vocabulary within medicine and health, the role of HIPs for MeSH translation to Norwegian were found significant in terms of nurses HIL promotion through overcoming the language barrier. However, English language skill

was also found important for nurses as most of the databases are in English. The interview informants were expressing their regarding the language problem issue of the nurses in the following way:

Nurses want to read literature in Norwegian by using Norwegian MeSH term as language problem is a problem for the whole education. They are not interested in reading English literature, which is a challenge for Nordic countries as most of the databases for nursing are in English... (I₁)

...very often when nursing students come with the problem in searching English databases regarding nursing where they do not always recognize immediately what they have found...whether those are relevant or those terminology may be not familiar (I₂)

HIPs as collaborator:

HIPs are collaborating at multiple levels through service provider, administrative/managerial and researcher roles. In relation to the promotion of HIL among nurses, HIPs are taking part in collaborative acquisition, which was revealed by the informant as:

...we are collaborating with faculty in acquisition of books or journals & generally... go through that and may be make up a suggestions as to whether there is a new book or may be a journal that they (nursing faculty) have not discovered... but I have inquired to subscribe. We are collaborating this way in acquisition. (I₂)

Another important collaboration was found as HIP-practice placement counselor join collaboration while the nursing students are supposed to go to the nursing home or hospital or any other health care institutes as a part of their educational goal. Such kind of collaboration from HIPs is essential, as nurses at practice placement require searching for information while conducting EBP. They are also supposed to follow the norms of information when using that information for conducting EBP. HIPs' collaboration in this regard helps nurses to promote their HIL regarding their daily operations or making any other clinical decisions regarding nursing issues at their practice place.

Another level of collaboration was observed as collaborative participation of HIPs in meeting, seminars, and research groups dealing with nurses HIL issues. Beside this, HIPs were also participating in collaborative discussion for the betterment of HIL among

nurses. HIPs' role in collaborative teaching activities with nursing faculties was found compulsory in a face-to-face classroom environment that revealed through informant's views as:

I go through a routine as to how to search, not specifically in various databases, but sort of a very basic information & then later on as nursing student progress in their study... they get like a question... find information about certain patient issue in the nursing home or in the hospital.... something like that... and then I would come in, when they (nursing student) have their question and it's answer through writing a little paper... starting with databases and correlated with what they are searching for... where I give an introduction how to search in specific databases & very often we go to the lab afterwards and they search and I help (I₂).

We collaborate with lecturers in preparing nursing students to their tasks or their work in practice placement. It is a two our lecture together in a classroom or auditorium. (I₂)

The study also found through interview that the HIPs were collaborating with the nursing institutes' personnel at multiple levels:

I am a contact librarian, so I have several meetings with the staff, both at top-down & bottom-up levels in nursing education. One time a year, I have meeting with the head of the institutes. We have meetings with the head of the studies several times in a year (I₁).

HIPs as motivator/supplementor

In relation to the HIL promotion among nurses, HIPs motivation and encouragement regarding efficient searching for relevant literature or research articles. However, motivation in this regard has been reinforced by some other issues, which were figured out through informant's statement:

...motivation comes from the realistic problems i.e. when students are getting a realistic problem (supposed to write papers), then they have something concrete to search with and that their motivation to engage themselves in lectures regarding IL about health information in a more effective manner and from that they could able to realize importance of learning such HIL courses that have been provided by the library (I₂).

In this regard nursing faculties or counselors from practice placement work as motivator where HIPs work in a supplementary role.

HIPs as coordinator

The study found from the statement of the informants as HIPs were bearing responsibilities as co-ordination for promoting HIL among nurses, which revealed as:

One of my colleagues has responsible for the coordination of the teaching. All of our teaching is scheduled into the curriculum. The coordinator also has ongoing contact with each of the teachers to coordinate our teaching and to have a quality assurance of the content in our lectures. (I₂)

HIPs as marketer

Marketing of library resources & library services for nursing education were identified as HIPs marketer role in promoting HIL among nurses. These kinds of marketing activity were also being performed through the institutional website and learning management system.

...Though we are lagging of concrete marketing plan for library sources and services, we have a great focus on it to make them (nurses) familiar with our (library) services... (I₁)

HIPs as team member

As per the statement of the informants, HIPs' role as team member for different project appeared vital either directly or indirectly in terms of promoting HIL among nurses. Those were figured out from the study as member of digital project in nursing home to increase their use of research articles and literatures (I₁+I₄). Another role in this regard was revealed as participating in the team for developing new digital tools, which was expressed by one of the informants in a way:

We have participated in a project in Langerud nursing home in three years to find out how the learning centre can do the counseling better not only physical environments, but also digital... in Frontier, Blog or Wiki (I₁).

This kind of participation for developing digital tools has a great impact in promoting HIL among nurses, as it is possible to supervise many nursing students simultaneously through new digital tools that boost learning levels, and make better usage of library resources(Kolstad, 2012).

Participating in research project as information specialist to assist nursing students and researchers was figured out as another significant role in promoting HIL among nurses.

HIPs as HIL educator

The concern about librarians' lack of pedagogic knowledge and skills in the design and delivery of IL education has been discussed in literature(Wang, 2010). However, most probably the HIPs' role as educator is the most important among all other roles related to the promotion of HIL among nurses, as it is vital for fostering the pace of nursing education by letting them empowered with Health information relevant to nursing issue. A myriad of pedagogical activities were figured out from the explanation of participating HIPs in relation to the HIL promotion among nurses as teaching of systematic search from databases; comparing different types of resources; how to find right word in MeSH, assisting research group; integrating HIL in the nursing curricula; integrating HIL in a tailored fashion at advanced level in nursing education; building efficiency in conducting EBP; organizing workshop for searching in different databases dealing with nursing issues; making nurses compatible for practice placement (internship); teaching of systematic research through meta learning approach; systematic literature review, teaching reference management system through reference management software like ENDNOTE; teaching of EBP by using PICO model offering courses on critical appraisal of EBP; providing the meaning of peer reviewed; offering courses how to search in specific databases; teaching about how to find information in NEHL. Furthermore, the informants explained HIPs pedagogical role systematically:

We offer a two hours lecture and one-hour workshop to the students in the first year. In the second and third year, we have offered at two-hour lecture.

Counseling in how to think when you want to work evidence-based is integrated from the first year of the bachelor education. The librarians counseling in how to search in different types of databases to find literature (especially research, but also books and

other resources) in integrated in the lecturers classroom teaching. They get at little taste of it in this lecture. The lecturer and librarian collaborate and plan their classroom teaching together. Afterwards the librarians have a two hours lesson in how to search (deeper searching, how to search systematic), and to the end the students come to a workshop in the learning centre with their tasks. The librarians counsel the students. The teaching and counseling happens before the students are going to their first period in a practice placement.

In the second year of the bachelor education, the students are offered a course in how to read research article. It will be a course in how to compare different types of resources...to learn about what peer reviewed means. Nursing student also get a course in searching systematically in databases.

In the third year of the bachelor education, the students we prepare the students together with the teacher or lecturer for their bachelor task. Afterwards the students offer a course or more a workshop in searching in databases.

For master degrees, we personalize the education in information literacy (I₁).

HIPs as counselor

HIPs role as counselor was identified as essential in promoting HIL among nurses through drop in counseling service, which ranges from simple clinical questions to broad project like developing clinical procedures and guidelines. In this regard, one informant expressed her views as:

In term of large project, they (nursing students) made appointment where they work...for new procedure... for treatment and care at the hospital and at national guidelines... they are very specific in this case e.g. mouth care of intensive patient (I₄).

HIPs as negotiator and decision maker

Vital decisions were taken through negotiation by HIPs regarding the integrated learning and teaching plan, marketing of library services, inclusion and exclusion of any topic regarding HIL in nursing curricula, how to serve the researchers in nursing education, budgetary allocation for teaching and recruiting library staff for nursing education, and

the provision of quality of health care library & information services for nurses through EBLIP.

... sometimes they (top-level) ask for further review in different decision making processes where we used to negotiate on different issues... also taking stand through logical argument in decision making process... (I₁ + I₂)

HIPs as facilitator

HIPs are now often described as ‘learning facilitators’(Seeley et al., 2010) or ‘knowledge mobilizers’ (Brice & Muir Gray, 2004)with new responsibilities(Bury et al., 2006). In the same line, all activities of HIPs as educator that were figured out from the study can be considered as facilitator. However, apart from those, some other activities in this regard were identified as very crucial in facilitating nurses from both aspects i.e. lower and higher level of literacy. Those were summarized as placing all nursing curricular books on the separate shelves in the library; borrowing or buying required books or articles for nurses; assisting research group; providing YouTube based tutorial on the library website regarding how to search in different databases; making special websites for nurses pointing out most valuable resources; promoting open access (OA) for nurses through networking with other HIPs; searching literature to make best clinical procedures/guide lines for their (nurses) daily operation at each hospital; providing resources for EBP in health care sectors; making mobile application for nurses regarding drug dosage calculation; keeping aware of copyright regarding how to archive researcher’s full text articles in the HeRA repository, and of policy document; providing segments or especial collection for nursing in e-resources; anticipating nurses information need to give support in the best way when they are ready to be motivated for those information; keeping aware of new resources through web and list serve; providing resources to the libraries at different nursing schools to meet their educational goal; reaching to the nursing students individually at library to help them regarding library issues through desk guidance or information stand at library service; providing answers to any query through e-mail, and newsletters via list serves; providing access facilities towards the databases of any HL; and collecting all clinical procedures/guidelines to make it into the best one for healthcare professionals including nurses. Apart from those decoding of nurses information need in

clinical environment and the translation of MeSH in Norwegian were revealed as crucial roles as a facilitator regarding the promotion of HIL among nurses, which informants stated in the following way:

We do it in a way that after getting wide questions from nurses, very often we get done with many different possible questions. Then the interviewer made comments in a way that are assisting them (nurses) in formulating their information need in a specific way or to say by decoding their information need... compatible to search through different search strategies to get the best output against their information seeking... and make them able to take effective decision (I₄).

...translation of MeSH in Norwegian language that has a great value for nurses both students and those in practical work... when it comes to HIL (I₃).

HIPs as supervisor

Cross-disciplinary supervision by subject teachers, clinical practice supervisors, and librarians using Wiki-based tools provided new perspectives on information-literacy competencies required by student nurses making searches for research-based practice, as well as showing how Wiki can be an effective tool for collaborative working.

In the same line the present study found the cross collaborative supervisory role in relation to the promotion of HIL among nurses by using web 2.0 tools. The informants further explained:

...The supervisors have different roles and point of views which complemented each other during the supervisory process.... nursing students were positive about web 2.0 tools based supervision, mainly because response times (excluding face to face meetings) were faster (I₁; Kolstad, 2012).

HIPs as contributor

The study found that HIPs were playing roles in promoting HIL among nurses through contributing scholarly articles or literatures, related to HIL issues, at national level as well as across the national boundary in different conferences seminars, and so on. HIPs were

also contributing in rethinking of doing counseling and faculty-HIPs join collaborative teaching as there is a strong focus on EBP in Norway (Kolstad, 2012).

It is difficult to put extra effort to contribute literature/articles in scholarly level due to the tight schedule at work place (I₂)... however; we try our best to come up with scholarly articles and literature in different national and international conferences, seminars... (I₁)

Norway has a strong focus on EBP, which pushes to rethink in doing counseling (I₁)

HIPs as participator

From participator point of views, several roles of HIPs were identified from the present study, which have impact—mostly long-term affects—in nursing domain regarding HIL issues. In this case, HIPs were acting like a learner to keep themselves up-to-date for the betterment of health information services towards nurses. Those were summarized as participating in various workshops, seminars, and conferences for broadening their knowledge and experiences regarding HIL; attending courses dealing with new issues in health information services; attending in courses offered by special group of medical and health librarian; attending courses on how to use databases, courses or copyright and the latest information on CRISStin; participating as a learner in conferences and seminars that have been organized by the Norwegian librarians association like SMH.

We are also used to go to CRISStin for attending different courses (I₂)... several workshops, seminars have been offered by the Norwegian special group of medical and health librarian where we go to attend as learners ... especially keep ourselves aware about the recent trends and new issues in health information services (I₁+I₂+I₃)

4.1.3 objective-3: *To learn about the problems being faced, and the potential of being perceived by HIPs in the application of their expertise regarding the promotion of HIL among nurses in the selected institutes.*

- i) Who are liable for what kind of problems?
- ii) What kinds of problems and challenges are there?
- iii) How do the HIPs observe the potentialities in promoting HIL among nurses from institutional perspectives?

4.1.3.1 Question i. Who are liable for what kind of problems?

Representative Quotation	Liable Person/Body	Kinds of Problems
<p>“Nursing faculties are very much restricted with their setup, which is hindering the formal integration of HIL in the nursing curricula through faculty-library join collaboration” (I₂).</p>	<p>Nursing faculty and institutional top-level</p>	<p>Psychological barriers</p>
<p>“Sometimes but not very often the problem has been arising regarding the coordination of the teaching and the content of the teaching as the EBP should be integrated in all assignment...whereas the nursing faculty did not see that of much important” (I₁).</p>		
<p>“Problem with maintaining schedule with the nursing faculty regarding the teaching plan” (I₁).</p>		
<p>“The verbal towards library is positive i.e. library is the heart of the institution but the decision makers have indifferences to act on it likewise” (I₂).</p>		
<p>“Inertia in the adaptation of new technologies, which are not moving with the time” (I₂).</p>	<p>Institutional top-level, HIPs and nurses</p>	<p>Difficulties in keeping the HIPs-nurses up-to-date with modern technology</p>
<p>“Nurses’ do not have much time and within this short time, they are asking for a lot with mysterious information need, which is difficult to decode, and they (nurses) have very unreasonable expectation from databases” (I₄).</p>	<p>Nurses</p>	<p>Mystery in expressing information need</p>
<p>“HIPs are lagging of the teaching faculties of nursing education from the perspective of practical pedagogical knowledge” (I₂).</p>	<p>HIPs</p>	<p>Lack of practical pedagogical knowledge</p>

<p>“Change management regarding top-down level of the institution i.e. library administration is separate from the teaching faculty which create constraints to access to the higher authority in nursing education” (I₂).</p>	<p>Institutional top-level</p>	<p>Constraints arising from change management</p>
<p>“In spite of playing role as an educator HIPs’ role in this regard is not valued/recognized properly rather, attitude towards HIP remain as a librarian” (I₂).</p>	<p>National body and institutional top-level</p>	<p>Problem with the attitude towards HIPs</p>
<p>“Nursing students are not interested in reading English literature, which is a problem for Nordic countries as most of the databases are in English” (I₁+I₂+I₄).</p>	<p>Nursing student</p>	<p>Language barriers</p>
<p>“Absence of using different forms of electronic teaching materials like <i>podcast, webcast, screencast, webinar</i> etc.” (I₁+I₂).</p>	<p>HIPs and institutional authority</p>	<p>Lack of modern technology in delivering teaching materials and tutorials</p>
<p>Institute A₂ has “no provision for the service in the websites regarding tutorial showing how to search library databases” (I₂).</p>		
<p>Due to the shortage of personnel, it is difficult to</p> <ul style="list-style-type: none"> – provide different services towards the nurses in spite of having intention (I₂); – reach all students or all kinds of student, as not all students can speak Norwegian properly, and HIPs have not enough time to take care of those students (I₁); – provide translation service in spite of language skill problem of the nursing students required more efficient HIP as this kind of service depends on the size and nature of the institute (I₁). 	<p>Institutional authority</p>	<p>Shortage of workforce</p>
<p>There is “no provision of e-books in nursing education, especially in Norwegian” (I₂).</p>	<p>Institutional top-level and national body</p>	<p>Unavailability of e-book</p>

“Absence of more strategic and clear marketing plan for library services” (I ₁).	Institutional top-level and national body	Discrepancy in marketing plan for library services
“Institutional authority is not showing enough interest in motivating and encouraging HIPs to come up with research articles dealing with recent trends of HIL regarding nursing issue” (I ₂).	Institutional authority	Indifference in motivation and encouragement
The “absence of network in such education (HIL) to cooperate with is another barrier” (I ₁).	National body and institutional authority	Absence of network regarding HIL education
HIPs “do not have access to patient records/patient journals in hospital” (I ₄).	Institutional authority	Restriction regarding access to patient journals
There is a “lack of subjective knowledge of HIPs regarding nursing education” (I ₁).	HIPs	Lack of subjective knowledge

4.1.3.2 Question ii. What challenges are there?

The problems and challenges that were identified from the informant’s statement in different aspects of HIPs roles regarding the promotion of HIL among nurses. These are as follows:

Service Provider

Challenges

Challenge with ASK A LIBRARIAN service

- There is a provision for ASK A LIBRARIAN service only to the nursing staff but not for the nursing student as “due to the lack of work force it is not possible to keep them (HIPs) engaging for the students for a long time” (I₁);
- Apart from that, “the provision for the service like ASK A LIBRARIAN is in a traditional way, but not through the web” (I₄).

Challenge with the decoding of information need

Beside this, sometimes “it is a big challenge to make problem specific enough against nurses query because they want to know a little bit about too many things” (I₄).

Administrator

Challenges

Challenge in adapting new technologies

- “Use of new technology is a challenge for both HIPs and nurses as it is important to manage fairly well for the nurses” (I₃).
- “Adaptation of new digital tools both in nursing education and in the learning center is a challenging part, as not all are going to adapt it equally” (I₁).

Challenge with budgetary issue

- “There is no direct participation in budgetary allocation body” (I₁).
- “There is no direct budgetary participation through attending in the budgetary committee dealing with library issue” (I₂).

Challenge for participating workshop, seminar, and conferences

“Challenge regarding budgetary issue for attending in seminar, workshop, and conferences held within national boundary or across the national boundary” (I₂).

Challenge with matching information need.

“The most challenging part is to match the need from both sides i.e. HIPs and nursing education staff” (I₁).

Challenge with assessing awareness

There is “no tool for assessing the awareness with a regular interval due to the lack of strategy and it is a challenge to implement such assessment” (I₁).

Educator

Challenges

Challenge with time-schedule

“Time duration for teaching HIL in the schedule is not enough due to the shortage of HIPs which is a challenge to complete instruction with HIL issue (I₁).

Challenge with language issue

- “Most of the nursing students want to read literature in Norwegian by using Norwegian MeSH term as it is a challenge for the whole education” (I₁).
- Challenging task for HIPs “to motivate students to search in English databases, as those students are very much interested to search in Scandinavian databases whereas the foreign students are bit behind in searching Scandinavian databases” (I₂) .

Challenge with motivating nursing students

It is a “challenge for the HIPs as students are not motivated enough to take part in learning HIL unless they are having task from their teacher or having real problem from their practice placement” (I₂).

Researcher

Challenges

Challenge with managing time for scholarly work

It is a challenge for HIPs to manage time in involving themselves for research work as they are mostly engaged with their duties at working place (I₂).

Student/Learner

Challenges

Complexity with budgetary issue

It is a “big challenge for HIPs to convince the institutional authority regarding the fund for attending as a learner in different kinds of programs dealing with modern trends of IL” (I₂).

4.1.3.3 Question iii. How do the HIPs observe the potentialities in promoting HIL among nurses from institutional perspectives?

Service Provider

Potentiality

- Putting a lot of attention, even at national level, to give nurses the best services and assistance (I₃).
- There is a benefit of serving small size of nursing students as they (HIP) are building personal relationship or rather to say familiar to each other, which make it easier from the both aspects i.e. providing and receiving services (I₂).

- Nurses participating in the project EBP/EBN are much ahead of formulating searchable question than those who have not the capability of expressing their information need properly (I₄).

Administrator

Potentiality

- Decision makers of the institution allow HIPs to submit the logical requirements for budgetary allocation regarding library resources (I₂).
- Nursing faculty became conscious regarding the importance of formal integration of IL in nursing education curricula through acknowledging the importance of the contribution and collaboration with HIPs (I₂).
- Making plan for the better services to doctoral students and the staff, especially those who are mostly dealing with research activities in the field of nursing (I₁).
- Having background in medical science (I₂) shows the potentiality of HIPs to act like an informationist (I₂).
- Developed country like U.S.A. has started to provide access to patient records in a way that physicians or nurses can write about any diagnosis on patient records and they can click on the link of that specific diagnosis from which they (physicians & nurses) can get into the resources of the library. Therefore, those links are working directly for the physicians and nurses where HIPs just help to make it function. This example is kind of motivation for the both i.e. authority and HIPs to make similar kind of practice in Norway (I₃).

Educator

Potentiality

- Searching for web 2.0 based compatible tools for more collaborative counseling as the nursing education want to collaborate more (I₁).
- Opportunity for HIPs regarding the participation at different forums dealing with the new provision of teaching-learning environment makes it possible to develop new kinds of learning environment or e-learning (I₁).

- Nowadays HIPs are getting more and more into the pedagogical role (I₂).
- Very often HIPs are coming to teach nursing students about HIL after receiving real task from their education (I₂).
- HIPs are motivating nursing faculty to bring articles in English into the nursing curricula so that the students are forced into it (I₂).
- Nursing authority has taken initiatives, either from the education or from the profession, where the HIPs have been invited for teaching about literature search or any other activities related to higher level of literacy. (I₄).

Researcher

Potentiality

- Nowadays HIPs are showing interest for collaborative participation with nursing faculty through research papers dealing with nurses' HIL issues in different seminars, workshops, conferences, meetings etc (I₁).
- HIPs are making research on EBLIP to figure out high quality research from which the result will become the basis of a decision making process in the field of library and information science, and of further researches (I₃).

Student/Learner

Potentiality

- The institutional authorities are being motivated to allow HIPs to attend conferences, seminars, workshops that are offered free (I₂).
- Nurses become able to act like a researcher while learning how to conduct EBP (I₁).

Service provider

Solution and Recommendations

- Need more concrete marketing plan by systematic integration of frontier, classroom, and library (I₁).
- The stakeholder in nursing education require to be active in taking steps forward for the provision of e-books in Norwegian to promote HIL among nurses in the digital environment (I₂).
- Need to put more effort to get nurses to go through the courses that the library provides, so that the nurses can be more familiar with different steps of information retrieving.

Administrator

Solutions and Recommendations

- HIPs can do much better for the library if administration is organized somehow under the teaching faculty, which creates better opportunity to interact with rector along with nursing faculties in relation to make decisions concerning the promotion of HIL (I₂).
- The nursing faculty should have a considerable mind to take HIP's advices regarding the integration of IL in nursing education curricula (I₂).
- Understanding of both level i.e. HIPs and nurses, is essential in adapting the usage of new technology (I₃).
- Developing tools for assessing awareness status regarding HIL among nurses with regular interval would have significant impact in promoting HIL among nurses as well as in enriching the role of HIPs (I₁).
- The change of designation from librarian to information specialist or informationist would have worked as a great motivation to fill them more honored as a professional and eventually, those will push them to be more focused with improving their duties and responsibilities towards their users in promoting HIL in an effective and efficient manner (I₄).

Educator

Solutions and Recommendations

- Learning English is a part of solution for overcoming language barriers. Apart from that, flourishing different Nordic databases in health sector can be an important solution in this regard (I₁).
- Integration of basic subjective knowledge regarding nursing education in LIS curricula is an effective initiative to prepare more HIPs that are efficient for promoting HIL among nurses.
- Exploitation of more electronic teaching materials for the nursing students is effective in giving lecture regarding HIL (I₁+I₂).
- The positive and encouraging attitude of the nursing faculties towards the HIPs through acknowledging their teaching role regarding HIL is an effective means for enhancing the pedagogical skills of HIPs.
- Fostering the pace of nursing education by letting them empowered with health information relevant with nursing issue (I₁).

Researcher

Solutions and Recommendations

- Institutional support is necessary from the authority through providing enough space for HIPs so that they can come up with research articles dealing with recent trends of HIL regarding nursing issue (I₂).
- Motivation and encouragement from the institutional authority regarding the participation of HIPs, ofcourse with their papers talking about the recent trends for promoting HIL among nurses, in different conferences or seminars or symposiums is also important to flourish HIPs' roles as researcher (I₁+I₂).

Student/Learner

Solutions and Recommendations

- Providing facility for HIPs from the institutional authority to attend as a trainee in different kinds of program offering recent trends of HIL regarding nursing issue is an effective means for fulfilling the role of HIPs as learner.
- The considerable mind of the institutional authority regarding the provision of the fund for HIPs attending as a learner in different kinds of programs dealing with modern trends of HIL is required to facilitate HIPs in learning new way of promoting HIL among nurses (I₂).

Chapter-5: Conclusion

5.1 Summary of Findings

Finally the study has come up with a summary of findings as per its objectives that can fit with the proposed model underpinned by Giddens' *structuration theory* where two domains appeared: nurses HIL practices and HIPs' roles domain.

Objective-1. *To know the awareness status of HIL among the nurses.*

In the nurses domain, HIL awareness status are explored in relation to the social practices through three dimensions of HIL (Table-3) where information seeking, finding and information usage, are the focus. The awareness status of nurses is snatched both aspects, i.e. higher and lower level of literacy, by figuring out their conceptual status regarding IL and HIL along with their familiarity regarding different information sources and rules for writing scientific publications and through their ability to seek, find, and use information in decision-making process.

From the context of nurses' domain, the nurses HIL awareness from the selected Norwegian Health Institutes are at satisfactory level but not so high, as the awareness status of the nurse respondents is not equal at individual level, or from the context of individual institute, with the continuum process of HIL. As per Giddens' *structuration theory*, HIL is a dynamic entity and in relation to that, such state of nurse HIL awareness might be a hindrance to making them self-empowered in building lifelong learner. This requires conducting the awareness status of HIL practices among nurses with regular intervals, so that they can be confident to cope with that continuum of the both lower and higher level of HIL. However, the IT savvy nature of comparatively young nurse students seems to reinforce the continuum process of HIL. Besides that, in Norway, the special focus on EBP of nurses has a great impact on the HIL practice in nursing domain.

The *structuration theory* is above all a theory about change, which is rooted in Giddens' concept of "agency" (Zheng,n.d). In relation to that concept, agencies exist in nurses' domain of awareness that comes from knowledgeable nurses' aspirations for further

cultivation of HIL. Those views/aspirations make an appeal for the further integration of HIP's modern and new roles towards the promotion of HIL among nurses. Such roles include translation service in indigenous languages, advanced researcher for publishing scholarly literature containing new thoughts, learning facilitator in finding more appropriate research questions, active participator in nursing community of practices, and maintaining liaison with the both level i.e. top-down and bottom-up. In relation to the proposed model, the awareness status of nurses provides agencies that make an approach towards authoritative body along with HIPs to take necessary initiatives, and to play roles reflexively to reinforce the practice of HIL in nursing domain.

Objective – 2. *To examine the activities and initiatives those have been conducted and taken by the HIPs in promoting literacy skills of nurses.*

The HIPs roles domain can be further explored through applying the proposed model underpinned by Giddens's *structuration theory*. In relation to structuring properties, the HIPs roles belong to a structure comprising roles as service provider, administrative/managerial, educator, researcher, and student (Leckie et al., 1996). As HIL is not a static entity rather it exists out of time and space (Giddens, 1985; Zheng, n.d.), the HIPs' each role coming from the structure, in relation to the promotion of HIL among nurses, go through the prototype roles, roles beyond prototype, newly arisen roles and roles derived from socio-political context. Furthermore, through structuring properties, all those roles being executed by HIPs, either directly or indirectly, for promoting HIL practices among nurses are viewed from two aspects i.e. lower and higher level. In this context, the study explores the roles of HIPs as project leader, collaborator, motivator, coordinator, marketer, teammate, educator, counselor, decision maker, facilitator, supervisor, contributor, and an active participator. These roles have collective impact in promoting HIL among nurses.

However, as the roles of HIPs vary in relation to the institutional dynamics, important consideration from this research context is that the agency could/can come from any one of the selected institutes. As per Structuration theory, agency indicates something regarding social change where change is not merely a change for any time rather, agent's capability to do in the first place. In relation to that, the A₁ institute or its activities

regarding HIL promotion might work as agency for the institute A₂ or A₄ as it has an advanced environment regarding IL integration, from both administrative and teaching/educator point of views, in the nursing curricula through faculty – HIP joined collaboration. Besides this, the institute A₃ has a role to play from the point of view of national level and in the same line; it has enough possibility to work as national agent for other health institutes in Norway. In the same line, A₃ has enough potentiality to come up with agencies through the collaboration with other health institutes belonging either in the national boundary or across the national boundary. Such agencies will help HIPs to come up with more changing roles for the betterment of HIL practices among nurses and thus, the nurses will be able to synchronize in the continuum process of HIL practices.

Objective – 3. *To learn about the problems being faced, and the potential of being perceived by HIPs in the application of their expertise regarding the promotion of HIL among nurses in the selected institutes.*

Again, as per Structuration Theory, agency is both situated and enabling in structuration process, which pushes the study to consider what are the constraints of agency, and what are the possibilities of change agency enables (Zheng, n.d.). The constraints and possibilities embodied in the study as problems and challenges, and potentials for improving HIP's roles. The constraints of the agency come from both institutional and individual levels in the form of psychological barriers of the nursing faculty, lack of HIP's pedagogical skills, inertia in the adaptation of new technologies among HIPs-nurses, language barriers of the HIPs-nurses, and indifference of the institutional authority in motivating and encouraging for the recognition of HIPs' roles regarding the promotion of HIL.

In addition, some existing challenges – reaching all kinds of student, decoding the nurses' mysterious information need, motivating students in HIL learning process, managing time for scholarly works, and receiving fund to attend in different programs – are imposing constraints towards the role of HIPs in promoting HIL among nurses. In this context, HIPs need to act reflexively in facing those challenges.

The possibility of changes agency enables are coming in the form of potentials like efforts from national level to provide best services to nurses; special focus on EBP/EBN in

Norway; consciousness of nursing faculty regarding the formal integration of HIL in nursing curricula; background of HIPs in medical science; involvement of HIPs into more pedagogical role; motivation of HIPs to bring articles in English language into the nursing curricula; usage of web 2.0 based tool for collaborative counseling; faculty-HIP joined collaborative research paper on nurses' HIL issue; research of HIPs on EBLIP to figure out the best practice; and motivation of institutional authority in allowing HIPs to attend conferences, seminars, workshops, meeting etc., which are being perceived by the HIPs.

Objective – 4. *To put effort in providing possible recommendations rational for overcoming those problems.*

To overcome the problems and challenges, and turn the potential into reality, exploitation of more agencies are required to come from institutional level, national level, and HIPs. The solutions and recommendations are shaping such approaches that focus the necessity for collaborative and interactive linkages between the authority and the HIPs. Those are possible through the integration of top-down and bottom-up approaches, which have further consequences as system integrations integrating the authoritative decisions and policies, and institutional arrangement. Such system integrations can make it possible to turn them as social integration through routinisation of social practices (Zheng, n.d.), which is a continuous process.

5.2 Further Area for Research

As the HIP's role in promoting HIL among nurses varies at institutional levels in relation to the complex array of social, cultural and institutional dynamics, a lot of possibilities appear as areas of further investigation. Furthermore, as per Giddens' Structuration theory HIL is not a static entity that can be acquired directly rather, HIL exists out of time and space, which refers to the extended possibilities of the present study. Among those possibilities derived from the present study, one issue sounds very important regarding the discrepancy of the educational qualifications among the participating informants as some were bearing both the backgrounds i.e. LIS and medical science whereas, some had only LIS background. This kind of discrepancy has direct or indirect impact on the role of HIPs in promoting HIL among nurses. On this background, as a continuation of the

present study, implication for further research could be formulated in a way that refers to investigating the possibilities for changing HIPs' role as 'informationist' in promoting HIL among nurses from Norwegian context. This context pushes to conduct a study regarding the further exploration of HIPs roles as 'informationist' in promoting HIL among nurses from the Norwegian context. This kind of investigation would require the inclusion of a wide range of HIP's qualifications from Norwegian context to bring the possibilities to turn the role of HIPs as 'informationists' in relation to the improvement of HIL practices among nurses.

As the informants talked about their problems regarding collaborative-pedagogical issues while taking interviews, another possible study refer to figure out the problems existing at faculty-HIP joined collaboration regarding HIL education and the possible solutions in strengthening the role of HIPs in promoting HIL practices of nurses from Norwegian context.

Often the informants of the study used to say that the younger nurses, especially the nurses studying at undergraduate level, are more advanced in using modern technology than older nurses working as professionals. It refers to make a comparative study for knowing the HIL status of undergraduate nurses and working professionals. The outcome of such study may come up with a picture expressing the presence of both types of nurses in continuum process of HIL.

As the study reveals the awareness status of the nurses comprising few respondents, further study can be conducted to investigate the role of agents in creating HIL awareness among nurses from Norwegian perspectives. The study can take a large scale of respondents from the both side, i.e. the agents and the nurses, to make an overall picture in this regard.

Another important issue came as the promotion of HIL among patients through the conversation of one informant working at hospital environment. It would be an interesting issue for the further research to figure out the HIP-nurse join collaborative role in promoting patients' HIL in the hospital environment from Norwegian perspectives.

5.3 Concluding remark

The overall findings support the hypotheses of the study as well for the model. The HIPs are playing collectively significant roles, either directly or indirectly, in promoting HIL among nurses in spite of existing variations in relation to the institutional nature and institutional HIL practice environment of nurses. As Norway is one of the most developed countries, its infrastructure supports potential to promote HIL practices of nurses through the agencies coming from the nurses' domain, HIPs' role domain and from the authoritative body at institutional and national level. However, in spite of belonging in most developed countries, the promotion of HIL practice wants different agents to come up with more agencies for changes through their reflexive acts. Each recommendation of the study work like an approach for *system integration* whereas the potentials for possible changes appear as *social integration*, and in turn structural changes of HIPs' role in promoting HIL among nurses, which support the hypothesis for the model as well as the justification of the model.

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Appendix A
Questionnaire for Nurses'

1. Personal/Demographic Information

a) Designation:

.....

.....

b) Which age groups do you belong to?

- | | |
|--------------|-------------|
| I. below 20 | II. 20 – 25 |
| III. 25 – 30 | IV. Over 30 |

c) Your educational qualification

.....

2. In your view, what is Information Literacy (IL)? (You can choose multiple answers from the following)

- a) A set of competencies to recognize needs for information, and have the ability to locate, evaluate, and use the needed information effectively.
- b) An important attribute in achieving lifelong learning, because it contributes to informed decisions based on critical reasoning and thinking.
- c) IL as primary generic skills embedded in courses and programs of various subject domains.
- d) Informed learning or Meta learning.
- e) As a process of being empowered in relation to various information practices within certain domains.
- f) Do you have any other consent in this regard? (Please mention)

3. In your view, what is health information literacy (HIL)? (You can choose multiple answers from the following)

- a) Skills related to (i) use of health care services, (ii) health outcomes, (iii) costs of health care, and (iv) disparities in health outcomes or health care service use.
- b) A set of abilities needed to: recognize health information need; identify likely information sources and use them to retrieve relevant information; assess the quality

of the information and its applicability to a specific situation; and analyze, understand, and use the information to make good health decisions.

c) As a process of being empowered in relation to various information practices in nursing domain.

d) Do you have any other consent in this regard? (Please mention).

4. How do you view the importance of information in your profession?

a) pivotal in all spheres of the profession b) depending on individual need perspective in problem-solving situation c) any other comments (Please mention).

5. What information sources you usually consult for performing your professional activities

Type of Information Sources	Very Often	Often	Seldom
Formal			
Informal			
Online databases			
Any other			

*Please mention what kind of other sources you have been consulted.

6. Please put 'X' in the following table where you will find it appropriate:

	Skills/Understanding	I strongly disagree	I disagree	I neither agree nor disagree	Agree	I strongly agree
1.	I understand the idea of the rationalization of activities in health care based on scientific data					
2.	I can distinguish scientific information from other types of information					
3.	I know how to identify barriers which make dissemination and use of scientific information Difficult					
4.	I know the web portals and information directories in health care					
5.	I can get to the information					

	resources provided by the most important ones in the field of public health					
6.	I can find publications on a specific topic dealing with nursing issues in health care sector by using different databases such as: CINAHL, Medline, Cochrane Library etc.					
7.	I understand the rules for drawing up a systematic review of scientific publications					
8.	I can conduct the evidence based practice in an efficient manner.					
9.	I can assess whether the source of information (e.g. journal, institution website) is a reliable source					
10.	I understand the rules governing the creation of bibliographic databases and the resulting principles and problems of searching in these databases					
11.	I can find information on a specific topic on the website of the WHO					
12.	I know the rules for writing scientific publications					
13.	I understand the need for specialized training of information workforce in nursing domain.					

(Niedźwiedzka & Hunsår, 2010, p. 17 to 18)

7. Do you think library professionals are doing enough to fulfill the health information needs of nurses and health professionals? If not, why do you think so?

8. What services provided by health librarians do you find most effective for upgrading your health information literacy?

9. What skills do you find most important for performing your duties to nurses and other health professionals?
10. Do you believe that the health information services/profession is undergoing a paradigm shift? If yes, what are the areas that have been most affected by this shift?
11. Do you think librarians are doing enough to upgrade their professional status in the 21st century? If not, what is the reason and what should they do to change the scenario?
12. What steps should be taken by the authorities for strengthening the HIL activities?

Appendix B

Questionnaire for Health Information Professionals working in Health/ Nursing Department

1. Personal/Demographic Information

a) Designation:

b) Official address:

.....

.....

c) Which age group do you belong to?

i. below 25 iv. 41-50

ii. 26-30 v. 51-60

iii. 31-40 vi. Over 60

d) Your educational qualification (highest degree achieved)

.....

2. Professional information

a) How long have you been working in this library?

Since.....

b) How long have you been working in your present position?

Since.....

c) What are your job responsibilities? (Please mention it from integrated perspective rather than individual perspective).

d) Describe your information technology skills.

3. Please mention the role that you have been playing in relation to the promotion of HIL among nurses'. Please mention it from the following perspectives considering four aspects (prototype roles, roles beyond prototype activities, roles that have been imposed by digital era, and any special role from Norwegian perspectives) in each perspective:

- Role as a service provider point of view
- Role as an administrator/manager point of view
- Role as a researcher point of view

- Role as an educator point of view
 - Role as a student point of view
4. Please mention that what problems you are facing in performing those roles.
 5. Please put few words regarding the prospects of HIPs in promoting HIL among nurses’.
 6. Please put few words regarding the awareness status of the nurses’ from librarian’s point of view.
 7. Do you have further consent in this regard? (Please mention).

I₁

1. In this case do you have any faculty librarian joint collaboration teaching programs?
2. For the integration process what kind of role you are playing i.e. you are suggesting or putting any other contribution in this regard?
3. In this case, I m little bit curious that whether you are emphasizing or the practical aspect like how to search/any other?
4. Do you have any initiative regarding how to use MeSH for searching at the beginning of your training program or courses?
5. Did you find any problem regarding the collaboration with teacher?
6. What king of databases you have been using in 1st year?
7. There is no version of MeSH in Norwegian (it is an ongoing project) do you think it is a problem?
8. Do you have any attachment with hospital, if so are you providing any services or training regarding how to find patient records?
9. Do you think this kind of supervision is a problem for promoting HIL any nurses?
10. Do you think any kind of problems have been existing in promoting HIL among nurses?
11. From which level they are being separated as a specialist nurses like cardiology, psychiatry...?

12. Researcher was asked about the way of.../doing EBP from the student nurses point of view as practitioner nurses are way EBP in case of any emerging issue at hospital was environment, but what's about student nurses (for the assignment or any other way)?
13. Why they are going for their 1st period of 'practice placement' (Internship)?
14. Do you have any role regarding editing report in the library?
15. Why do you think the strategic marketing plan is absent?
16. Do you have any role from this digital era?
17. Who are also familiar as subject librarian?
18. Are you working with the translation of MeSH?
19. What is the problem in marketing your service?
20. What kind of prospects do you think in this regard existing i.e. in future this or that kind of prospect you have in providing services?
21. From the service provider point of view how could you rate the awareness of nurses? Do you receive this kind of request.... from... which help you to understand that they are aware enough regarding HIL?
22. Are you providing these services from your consciousness or your willingness?
23. After their demand-primarily, so you are thinking nurses are enough aware regarding their HIL?
24. Pro regarding the service provider point of views as through all these services what kind of HIL... you are have supporting?
25. What do you think about administrative/managerial role?
26. Do you have any provision to take statistics of library usage after regular interval?
27. Do you have any role regarding budgetary allocation?
28. What kind of problems in performing administrative role?
29. Has this digital era been challenging you administrative or managerial role?
30. Do you think any kind of extra-administrative or managerial role you are supposed to perform from Norwegian perspective?
31. What is the future potentiality in this administration or management?

32. What kind of role are you playing in the digital era as a researcher?
33. Through your administrative role what kind of nurses HIL skills you are supporting?
34. Is there any special role regarding researcher point of view that have been emerged from Norwegian perspective/may be from Scandinavian perspectives?
35. What's about the potentiality regarding the role as a researcher?
36. Any other potentiality/problem in this regard?
37. What kind of skills you are supporting as a researcher?
38. Which phase do you embedded HIL in the curricula as an educator?
39. What's about the role from learner point of view?

Appendix C

Questionnaire for Health Information Professionals working in Health/ Nursing Department

1. Personal/Demographic Information

- a) Designation
- b) Official address:
-
-
- c) Which age group do you belong to?
- | | |
|-------------|-------------|
| i. below 25 | iv. 41-50 |
| ii. 26-30 | v. 51-60 |
| iii. 31-40 | vi. Over 60 |
- d) Your educational qualification (highest degree achieved)
-

2. Professional information

- a) How long have you been working in this library?
- Since.....
- b) How long have you been working in your present position?
- Since.....
- c) What are your job responsibilities? (Please mention it from integrated perspective rather than individual perspective).
- d) Describe your information technology skills

3. Please mention the role that you have been playing in relation to the promotion of HIL among nurses'. Please mention it from the following perspectives considering four aspects (prototype roles, roles beyond prototype activities, roles that have been imposed by digital era, and any special role from Norwegian perspectives) in each perspective:

- Role as a service provider point of view
- Role as an administrator/manager point of view
- Role as a researcher point of view

- Role as an educator point of view
 - Role as a student point of view
4. Please mention that what problems you are facing in performing those roles.
 5. Please put few words regarding the prospects of HIPs in promoting HIL among nurses’.
 6. Please put few words regarding the awareness status of the nurses’ from librarian’s point of view.
 7. Do you have further consent in this regard? (Please mention).

I₂

1. To what extent you have been contributing in the curriculum/ curricula?
2. Do you have any faculty librarian join collaboration program at your work place?
3. Do you think that you have any kind of problem in this regard?
4. Do you think that there is an absence of chain of command in the hierarchy?
5. Do you have any initiative like seminar, conferences, workshop training in this regard to promote HIL any nurses?
6. Do you have any problems in writing articles regarding different issues on a continuums basis?
7. Do you have any background regarding nursing education or have you only the background from LIS education?
8. Without having degree in LIS how could they execute their library activities?
9. Do you think that librarians are bit behind in pedagogical skills?
10. How many teaching facility you have for nursing education?
11. What kind of role you are providing as service provider from the point of view of digital era?
12. Do you have drop-in service?
13. Do you have any other activities from service provider point of view?
14. Do you find something that is associated with particular courses for writing their assignment?
15. How could you raise the issue or question in EBN?

16. Do you think you are supported to play some role from educator point of views in this digital era?
17. Please mention your role from student point of view.
18. Are you joining to participate any kind of courses or training that directly related with digital literacy?
19. Are you taking part in any kind of budgetary allocation for your library?
20. What are the problems in each step has been facing?
21. What are the problems from service provident?
22. Why it is not syncorizing?
23. In teaching what kind of problems you are facing?
24. Do you think students are aware enough regarding HIL?
25. Do you think missing to important conferences/seminars/workshops/training programmer have been hindering your role in promoting HIL among nurses?
26. What kind of potentiality you are thinking that you have in your working environment?

Appendix D

Questionnaire for Health Information Professionals working in Health/ Nursing Department

1. Personal/Demographic Information

- a) Designation
- b) Official address:
-
-
- c) Which age group do you belong to?
- i. below 25 iv. 41-50
- ii. 26-30 v. 51-60
- iii. 31-40 vi. Over 60
- d) Your educational qualification (highest degree achieved)
-

2. Professional information

- a) How long have you been working in this library?
- Since.....
- b) How long have you been working in your present position?
- Since.....
- c) What are your job responsibilities? (Please mention it from integrated perspective rather than individual perspective)
- d) Describe your information technology skills
- i. Operating system: Windows Linux Other DSpace (HeRA repository)
- ii. MS Office: Word Excel PowerPoint Access
- iii. Troubleshooting
- iv. Database management
- v. Email and web browsing
- vi. Web design – just from outside, making it attractive
- vii. Desktop publishing

viii. Image processing

ix. Computer Programming

x. Networking

xi. Others: (Please specify)

3. Please mention the role that you have been playing in relation to the promotion of HIL among nurses'. Please mention it from the following perspectives considering four aspects (prototype roles, roles beyond prototype activities, roles that have been imposed by digital era, and any special role from Norwegian perspectives) in each perspective:

- Role as a service provider point of view
- Role as an administrator/manager point of view
- Role as a researcher point of view
- Role as an educator point of view
- Role as a student point of view

4. Please mention that what problems you are facing in performing those roles.

5. Please put few words regarding the prospects of HIPs in promoting HIL among nurses' HIP.

6. Please put few words regarding the awareness status of the nurses' from librarian's point of view.

7. Do you have further consent in this regard? (Please mention).

I₃

1. What kinds of roles the librarians of Electronic Health Library in relation to health information literacy are performing?

The break down of those roles could be viewed in the following ways:

- How are they managing their e-resources?
- Do they have any segments or special collection for nursing in e-resources?
- Do they provide any training program or workshop for health care practitioners in relation to the usage of e-resources?
- To what extent they are providing resources for evidence-based practice in health care sectors? How much does it cover with nursing issues?

- Do they provide any current awareness service regarding their new services and collections? Anything special with nursing issues?
 - Are you contributing to scholarly journals regarding issues related with healthcare librarianship as well as HIL?
 - Have you involved with any kind of HIL network?
 - Do you have experiences in to talk on HIL issue in different seminars or conferences?
 - Do you have experiences to work with as a team member in different research project with health care practitioners?
 - Are you providing any database services to different health care institutes/departments/ libraries/ nursing department?
2. How does these activities affect in the domain of health care sector like nursing in relation to support their HIL skills?
 3. Do they have any HIL program or activities (both within or outside/ physically or virtually) to promote their health information services?
 4. Do they have any special plan or project for enriching nursing education by promoting their HIL?
 - It means do they have any plan to provide a countrywide HIL program(phase by phase) with an special focus on nursing education or in general?
 5. Do they have any collaborative initiative regarding the enhancement of health care network, which will facilitate the teaching-learning process of health care sector with a special focus in nursing domain?
 6. Do they contribute in formulating any national policy regarding the HIL literacy in different health care sectors'?
 7. Do they have any contribution and activities (teaching) related to the integration of HIL in the nursing education curricula and instruction as per the curricula focusing on the usage of electronic resources of the Norwegian Electronic Health Library?

8. Do you have any initiative like seminar, conferences, workshop training in this regard to promote HIL any nurses?
9. To what extent you have been contributing in the curriculum/curricula?
10. In which are you are assisting in EBP?
11. Do you have any faculty librarian join collaboration program at your work place?
12. Do you think that you have any kind of problem in this regard?
13. Do you think that there is an absence of chain of command in the hierarchy?
14. Do you have any problems in writing articles regarding different issues on a continuums basis?
15. Do you have any background regarding nursing education or have you only the background from LIS education?
16. Without having degree in LIS how could they execute their library activities?
17. What role are you playing for the further education?
18. You are developing your resources on which basis?
19. Do you have any collaboration or network with similar kind of institute or something like?
20. How NEHL building their resources?
21. What were your job responsibilities while working in the hospital?

Appendix E

Questionnaire for Health Information Professionals working in Health/ Nursing Department

1. Personal/Demographic Information

- a) Designation:.....
- b) Official address:
- c) Which age group do you belong to?
- | | |
|-------------|-------------|
| i. below 25 | iv. 41-50 |
| ii. 26-30 | v. 51-60 |
| iii. 31-40 | vi. Over 60 |
- d) Your educational qualification (highest degree achieved)
.....

2. Professional information

- a) How long have you been working in this library?
Since.....
- b) How long have you been working in your present position?
Since.....
- c) What are your job responsibilities? (Please mention it from integrated perspective rather than individual perspective)
- d) Describe your information technology skills.

3. Please mention the role that you have been playing in relation to the promotion of HIL among nurses'. Please mention it from the following perspectives considering four aspects (prototype roles, roles beyond prototype activities, roles that have been imposed by digital era, and any special role from Norwegian perspectives) in each perspective:

- Role as a service provider point of view
- Role as an administrator/manager point of view
- Role as a researcher point of view
- Role as an educator point of view
- Role as a student point of view

4. Please mention that what problems you are facing in performing those roles.

5. Please put few words regarding the prospects of HIPs in promoting HIL among nurses'
6. Please put few words regarding the awareness status of the nurses' from librarian's point of view.
7. Do you have further consent in this regard? (Please mention).

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1. What was your job response while working in the hospital?
2. What are the guidelines for professional ethics?
3. What kind of special responsibility do you have in the hospital for the nurses?
4. How do you assess in determining information need?
5. Do you think this is closely related with their demand for EBP?
6. Do you have any provision for keeping patient record?
7. Mention your service provider role again.
8. Do you think you are providing any service from the Norwegian aspect?
9. Do you have any service on the web-site, like ask a librarian for instant service?
10. Do you have any other services that have been emerged from the Norwegian perspective?
11. Were you responsible for organizing workshop, seminars, conferences or some thing like this?
12. Is there any other managerial task you have to perform-like budget allocation?
13. Are you keeping track with the statistics regarding the usage of the library, i.e. which resources are being highly used, which has-low demands etc.,...are you performing this kind of role?
14. Are you keeping any kind of restriction to access those databases?
15. Is this digital era supporting any kind of administrative/managerial activities?
16. Do you think that you had to perform some special administrative role due to Norwegian perspective?
17. Do you have any kind of administrative responsibility in term of organizing conferences, seminar, workshops or training programmer or library orientation program?
18. What kind of problems you were being faced while exciting those duties?
19. How to search different databases?
20. Are they (nurses) working in those projects for long time or for short time?

21. What is the role HIP, for the advanced or for the less advanced and for novice?
22. How could you reach at different level of nurses i.e. from novice to advanced nurses?
23. Is it possible to help a group of nurses together?
24. Did library have some orientation program for nurses?
25. How they were maintaining the schedule for all those courses (i.e. from novice or advanced nurses)?
26. Why are you facing issues as if some nurses are less advanced and some are more advanced?
27. What is the organizational pattern of your total hospital library environment?
28. Do you think that they are merging two libraries together for cutting budget?
29. How could you serve the internship student?