

**IMPLEMENTATION OF EVIDENCE BASED NURSING PRACTICE AND
ASSOCIATED FACTORS AMONG NURSES WORKING IN JIMMA ZONE
PUBLIC HOSPITALS, SOUTHWEST ETHIOPIA**

By: - Dawit Hoyiso (BSC. N)

**A RESEARCH THESIS SUBMITTED TO JIMMA UNIVERSITY COLLEGE OF
HEALTH SCIENCE, DEPARTMENT OF NURSING IN PARTIAL
FULFILLMENT FOR THE REQUIREMENT OF MASTER'S DEGREE IN
ADULT HEALTH NURSING.**

May, 2015

Jimma Ethiopia

JIMMA UNIVERSITY COLLEGE OF HEALTH SCIENCE DEPARTMENT OF
NURSING AND MIDWIFERY

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By Dawit Hoyiso (BSC.N)

Advisors: -

1 Professor Tefera Belachew (M.D, M.Sc., PhD)

2 Million Abera (B.SC. N, M.Sc.N)

Abstract

Background: - *In spite of all the various programs and strategies to promote the use of research finding there is still gap between theory and practice. Difference in outcomes, health inequalities, and poorly performing health service continue to present a challenge to all nurses. A number of studies from various countries have reported that nurses' experience of evidence-based practice is low. In Ethiopia there is an information gap on the extent of evidence based nursing practice and its associated factors.*

Objective: - *the study aims to assess the implementation of evidence based nursing practice and associated factors among nurses in Jimma zone public hospitals.*

Method: - *Institution based cross-sectional study was conducted from March 1-30/2015. A total of 333 sampled nurses for quantitative and 8 in-depth interview of key informants were involved in the study. Semi-structured questionnaire was adapted from funk's BARRIER scale and Friedman's test. Multivariable Linear regression was used to determine significance of association between dependent and independent variables. Pretest was done on 17 nurses of Bedele hospital. Ethical issue was secured.*

Result:-*Of 333 distributed questionnaires 302 were completed, giving 90.6% response rate. Of 302 participants 245 were involved in EBP activities to different level (from seldom to often). About forty five(18.4%) of the respondents had implemented evidence based practice to low level (sometimes), one hundred three (42 %) of respondents had implemented evidence based practice to medium level and ninety seven (39.6 %) of respondents had implemented evidence based practice to high level(often). The first greatest perceived barrier was setting characteristic (mean score=26.60±7.08). Knowledge about research evidence was positively associated with implementation of evidence based nursing practice ($\beta=0.76$, $P=0.008$). Similarly, Place where the respondent graduated was positively associated with implementation of evidence based nursing practice ($\beta=2.270$, $P=0.047$). Also availability of information resources was positively associated with implementation of evidence based practice ($\beta=0.67$, $P= 0.006$).*

Conclusion: -*Even though larger portion of nurses in this study were involved in evidence-based practice whereas small number of participants had implemented frequently.*

Evidence-based nursing practice was positively associated with knowledge of research, place where respondents graduated, and the availability of information resources. Organizational factors were found to be the greatest perceived barrier. Intervention programs on awareness creation, training, resource provision, and curriculum issues to improve implementation of evidence based nursing practice by stakeholders are recommended.

Key words:-*evidence based practice, nursing practice, research utilization Ethiopia*

Acknowledgement

First I would like to express my deepest gratitude to my advisors, prof. Tefera Belachew and Ato Million Abera for their contribution and constructive comments they have provided during the whole course of this thesis preparation.

Second I would like to say thanks to Jimma University for providing me this opportunity to continue this research works.

Third my appreciation goes to my friends for their important inputs in the preparation of this research works.

Fourth I would like to say thanks to Jimma zone health department, hospital administration and my study participants for their prized inputs.

The last but not the least is that my appreciation goes to my family for their continuous follow up in my academic upgrading.

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List of abbreviations

APN	Advanced Practice Nurse
EBHC	Evidence Based Health Care
EBP	Evidence Based Practice
EBNP	Evidence Based Nursing Practice
FLN	Front Line Nurse
GP	General Practitioner
IRB	Institutional Review Board
JB	Jonna Briggs Institute
JU	Jimma University
JUIRB	Jimma University Institutional Review Board
JUSH	Jimma University Specialized Hospital
PICOT	(Population, Intervention, Comparison and Time Frame)
RU	Research Utilization
UK	United Kingdom
WHO	World Health Organization

CHAPTER ONE

INTRODUCTION

1.1 Background

Evidence based practice (EBP) is the use of best research finding(evidence) to answer a burning clinical question together with one's own clinical expertise generated from outcome management or quality improvement projects and patient preference and values. Researchers generate new knowledge through rigorous research (external evidence) and evidence based practice (EBP) provides clinicians the tools to translate the evidence into clinical practice and integrate it with internal evidence to improve the quality of health care and patient outcomes (1).

Its basic principles are that practical decision made should be based on research studies and that these research studies are selected and interpreted according to some specific norms and characteristic for evidence-based practice (EBP). evidence based practice utilizes the most up to date methods of providing care, which have been proven through appraisal of high quality studies and statistically significant research finding(2).

Health care that is evidence-based and conducted in a caring context leads to better clinical decision and patient outcomes. Gaining knowledge and skill in the evidence based practice (EBP) process provides nurses and other clinicians the tools needed to take ownership of their practice. There are five sequential steps to the (EBP) process. Step 1: asking the clinical questions in the PICOT (Patient/Population, Intervention/Issue of interest, Comparison, Outcome and Time frame) format to get more effective evidence. Step 2: searching for the best evidence to select. Step 3: critically appraising the evidence. Step 4: addressing the sufficiency of the evidence to implement or not to implement, and evaluating the outcome of the evidence implementation (3).

Evidence-based practice takes resource, work, time, and effort but outcome makes them worthwhile. Every patient deserves care that is based on the best scientific knowledge and that ensures high quality, cost-effective care (4).

For successful implementation of research that supports the effectiveness of a clinical intervention, evidence needs to be located in its highest quality. Successful implementation is a

function of the relation between the natures of the evidence, the context in which the proposed change is to be implemented, and the mechanism by which the change is facilitated (5).

Clinicians often ask how much and what type of evidence is needed to change practice. A good rule of thumb to answer this question is that there needs to be strong enough evidence to make a practice change. Specifically, the level of evidence plus the quality of evidence equals the strength of evidence, which provides clinicians the confidence that is needed to change clinical practice (1).

1.2 Statement of the problem

In spite of all the programs and strategies to promote the use of research findings, there is still a gap between theory and practice (6). And there are many practices that are being implemented in healthcare that have no or little evidence to support their use (e.g. double-checking of pediatric medication, routine assessment of vital signs every 2 or 4 hours in hospitalized patients (1).

Differences in outcomes, health inequalities, and poorly performing health services continue to present a challenge to all nurses. Poorly informed decision-making is one of the main reasons services can fail to be delivered in an optimal way and can also contribute to variation in practice which makes it less efficient, ineffective and inequitable. Half of the world's deaths could be prevented with simple, cost-effective interventions, but not enough is known about how to make these more widely available to the people who need them. Changing practice is difficult, wastes time and can have unexpected outcomes. However, change can be exciting and motivating. Understanding and planning how to take evidence into practice, to action knowledge, is important. This area, because it is so critical, has been the subject of an increasing amount of research itself (7).

All over the world there is a growing appreciation of the importance and difficulty of evidence-based nursing practice (EBNP). As part of international efforts to facilitate the dissemination of EBNP, research has focused on identifying barriers to utilization of EBNP. Identifying such barriers can help international efforts to develop strategies to overcome these. One of these barriers found to be lacking the knowledge and skills to evaluate research findings (8).

A number of studies from various countries have reported that nurses practice EBP and distinct EBP activities to a low extent (9).

Researchers have argued that daily practice in nursing care is influenced more by tradition, intuition, and experiences and less by scientific research. Reviews in literature focus on the difficulty that exists trying to apply research findings into practice. The major barriers to the utilization of research findings were found to be the work organization (setting), the adopter (nurse), and presentation of research findings (6).

Even though evidence based health care has been shown to be an efficient and much needed practice worldwide, developing countries have difficulties in accessibility of existing evidence and medical resources than in developed countries.

In Africa EBP implementation is late compared to developed world. Incorporating evidence-based health care (EBHC) into the African context means setting priorities, developing evidence summaries and guidelines and implementing research finding relevant for African countries to support health care for all. Contextualizing evidence relates to several issues, including the lack of evidence available for an African setting. The effectiveness of an intervention in Africa may be different from that found in studies elsewhere because of factors such as: later presentation, co-infections, malnutrition, higher levels of self-medication and use of traditional, reduced level of resources, including human resource for basic health care, and political instability. In addition, effective interventions, as determined by many systematic reviews, may not be available or affordable in most African settings. This means that Africa needs valid African-specific research and that authors of systematic reviews should consider this by avoiding overgeneralization when making conclusion (10).

In Ethiopia, the federal ministry of health lacks skilled health professionals who could help to synthesize evidence for policy-making. Moreover, at all levels of the health systems there is little culture or tradition of trusting or using evidence (11).

Also in Ethiopia as well as in study area there is a gap of (shortage) of research articles published concerning EBP utilization. This study seeks to explore level of EBP implementation and will give information concerning factors, which hinder implementation of EBP among nurses working in Jimma zone public Hospitals.

CHAPTER TWO

2.1 literature review

A number of studies from various countries have been done concerning evidence-based practice of nursing professionals. The result from different articles shows that there are perceived barriers and facilitators of EBP specially a range of individual and organizational factors associated with nurse's practice of EBP have been explored (9).

A study conducted in Germany by Panagiari et al on 'Barriers and facilitators for implementing evidence based nursing practice among German nurses' reported that about 65% of respondents were not familiar with term EBP and insufficient time(84%), nurse lack of authority to change patient care practice(64%) were major perceived factors identified. Only 11.5% had participated in research, 53% had participated in the development of guideline, and 19.5% had participated in the solution of researchable problems in the previous year (6).

Another study done in Washington state university by Schoonever, on 'Barriers to Research Utilization Among Registered Nurses Working in a Community Hospital' indicated that the greatest barrier to research utilization were characteristics of the organization(mean 2.88,SD±0.55) ,followed by characteristic of communication(mean2.53, SD±0.55), characteristic of adopter,(mean 2.35, SD ±0.68) and characteristic of the innovation(mean 2.05, ±SD.58)(12).

A study conducted in Sweden by Bostrom et al on 'Factors associated with evidence-based practice among registered nurses' showed that 19% formulated questions and performed searches in databases, 56% used other information sources, 31% appraised the literatures, 30% participated in practice development, and 34% participated in evaluating clinical practice. In this study the greater proportion of RNs working in elderly care applied EBP compared with the RNs working in hospitals, psychiatric care, and primary care (13).

Another study done in California University by Brown et al on 'Nursing practice, knowledge, attitudes and perceived barriers to evidence-based practice at an academic medical center' indicated that the practice of EBP had significant negative correlation with communication characteristic (r=0.13), knowledge/skills (r=0.16). This study concluded that the perceived

barrier predicted such small fraction of practice, attitude, and knowledge/skill associated with EBP (2.7, 2.4, and 4.5% respectively) (14).

A cross-sectional descriptive study done in China by Chien et al on 'Nurses' Perceived Barriers to and Facilitators of Research Utilization in Mainland China' reported that the mean score of 'organizational characteristic' was the highest (mean score=26.09, SD±6.25)(15).

A study done in Turkey by Uysal et al on 'Barriers to research utilization among nurses' showed that five out of the top 10 barriers were related to 'setting'. Educational level, undergraduate research education, and involvement in research activities were predictor factors of perceived barriers to research utilization. About 85% of respondents reported that 'facilities are inadequate for implementation of new idea which is setting related factor (16).

A study in UK by Gerrish and Clayton on 'Promoting evidence-based practice' showed that Lack of time, resources, and perceived authority to change practice influenced the extent to which nurses utilized formal sources of evidence(17).

A systematic review done in Iran by Heydari and Zeydi on 'Barriers to and Facilitators of Research Utilization' reported that the most important barriers to research utilization among Iranian nurses were related to the organization factors such as inadequate facilities; insufficient time on the job, lack of authority, physician cooperation, and administrative support(18).

Another systematic review done by Kerstin et al on 'the barriers to research utilization' indicated that the main barriers reported were related to the setting, and the presentation of research findings. This study also identified that barriers were consistent over time and across geographic locations, despite varying sample size, response rate, study setting, and assessment of study quality (19).

A study done on Montana State university by Kossel on 'factors influencing rural nurses attitudes and beliefs towards evidenced based practice' showed that Nurses who reported having a greater knowledge of EBP\ also reported a greater extent of evidence based care ($r=.42$,) (20).

A Study done in Turkey by Ozdemir and Akdemir showed that nurses who knew the definition of evidence-based nursing were more likely to utilize research finding in practice than others (21).

2.2 Conceptual framework

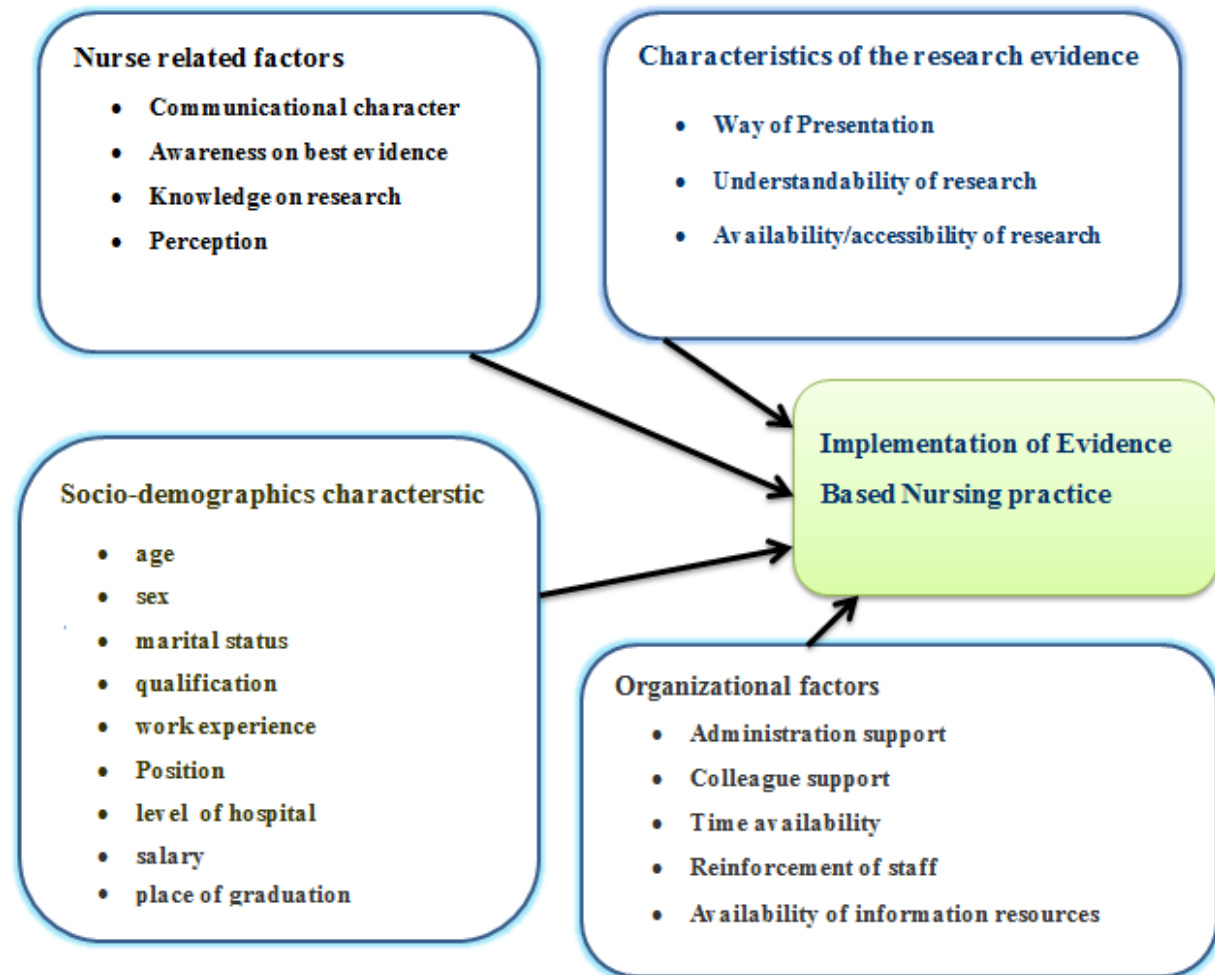


Figure 1:- Conceptual framework developed by the author after reviewing different literatures

2.3 Significance of the study

This study will offer pertinent information related to the level of evidence based nursing practice (EBNP) implementation and its factors associated. The research adds to the body of scientific knowledge development in utilization of evidence based nursing practice. The finding of this study will show basic factors, which hindered the utilization evidence based nursing practice in the study area. The finding of this study will also give clues for planners hospital administrators and policy makers in the quality of nursing care. Since there is shortage of published research in this specified problem area in Ethiopian context, the finding of this study will show direction for further study.

It also helps to design the strategic way to improve outcomes of patient care by enhancing implementation of new best evidence from research finding.

CHAPTER THREE

OBJECTIVE OF THE STUDY

3.1 General Objective of the study

To assess implementation of evidence based nursing practice and factors associated among nurses working in Jimma zone public hospitals southwest Ethiopia, 2015

3.2 Specific Objectives of the study

To determine level of evidence based nursing practice implementation among nurses working in Jimma zone public hospitals, south west Ethiopia, 2015

To identify factors associated with implementation of evidence based nursing practice among nurses working in Jimma zone public hospitals, south west Ethiopia, 2015

CHAPTER FOUR

METHODS AND MATERIALS

4.1 Study Area and Period

The study was conducted in four public hospitals found in Jimma zone, Oromia Regional State from March 1-30, 2015. Jimma is the Town of Jimma Zone, which is one of the Oromia Regional States, which is 352 km away from Addis Ababa, the capital city of Ethiopia, in southwestern part of the country. Based on the 2007 census conducted by the CSA, this zone has a total population of 2,486,155 an increase of 26.76% over the 1994 census, of whom 1,250,527 are men and 1,235,628 are women; with an area of 15, 568 square km.

In this zone there are four public hospitals namely, Jimma University specialized hospital JUSH, Shenen-Gibe hospital, Limmu-Genet hospital and Agaro hospital. The first two are situated in Jimma town whereas the latter two are Limmu town, which is 72km far from Jimma town and Agaro town, which is 45km far from Jimma town respectively. Except JUSH other three are at district level

JUSH plays a pivotal role in this zone and it is the only teaching hospital and referral hospital in the southwestern part of the country, and provides specialized clinical service to about 15 million people. Currently it is only teaching and referral hospital in the southwestern part of the country having 518 nurses. The rest three have 93 nurses all together (Shenen-Gibe hospital 32, Limmu-Genet hospital 34, and Agaro hospital 27). (Source:-Jimma zonal health department).

4.2 Study Design

Institution based cross-sectional study was conducted from March 1-30/2015. A quantitative method of data collection supplemented by qualitative method was used.

4.3 Population and Sample

4.3.1 Source Population

All nurses who were working in the hospitals.

4.3.2 Study Population.

All sampled nurses who were present at work in Jimma Zone public hospitals.

4.4 sample size determination and sampling techniques

4.4.1 Sample size determination

$n = \frac{z(@/2)^2 * p(1-p)}{d^2}$ = is the formal for sample size determination,

Where:-

n = required sample size

$z(@/2)$ =critical value for normal distribution at 95% confidence interval which equals to 1.96(Z value at alpha=0.05)

$P=0.5$, since level of evidence based practice utilization is not known.

With assumption of confidence interval, prevalence 50.0 % ($p=0.5$), $d =0.04$

$$n = \frac{z(@/2)^2 * p(1-p)}{d^2} = \frac{1.96 * 1.96 * 0.5 * 0.5}{0.04 * 0.04} = \mathbf{600}.$$

Since the number of nurses practicing (working in Jimma Zone i.e. source population is 611) which was less than 10,000 correction formula was used.

$$n_f = \frac{n}{1 + \frac{n}{N}}$$

$$= \frac{600}{1 + \frac{600}{611}}$$

$$= \frac{600 * 611}{600 + 611} = \mathbf{303}$$

Adding non-response rate **10%**, 30, will give **333** nurses.

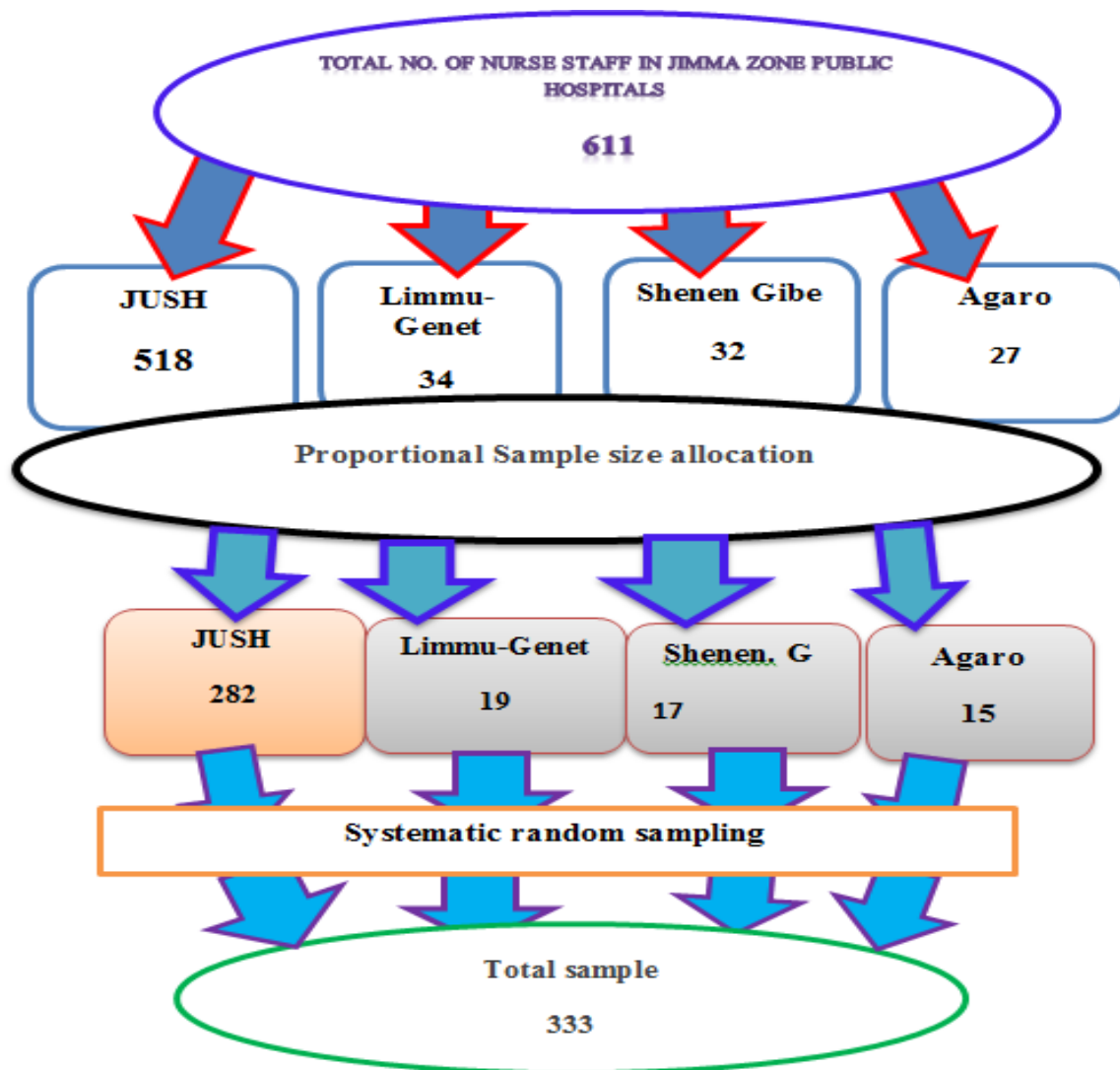
This sample was proportionally allocated to hospitals in the study area (JUSH, Limmu-Genet, Shenen-Gibe, and Agaro hospitals). The questionnaire was distributed for 333 sampled nurses

for quantitative method of data collection. 8 key informants were interviewed for qualitative data collection.

4.4.2 Sampling Techniques

Overall sample was proportionally allocated to each hospital and systematic sampling was used to select participants of the study.

Figure 2 schematic representation of sampling procedures of study participants from Jimma zone public hospitals, 2015



4.5. Inclusion and exclusion criteria

4.5.1 Inclusion criteria

All nurses working in four public hospitals of Jimma Zone during data collection period.

4.5.2 Exclusion criteria

Nurses who were having work experience less than 06 months.

4.6 Study variables

4.6.1 Dependent variables

Implementation of evidence based practice

4.6.2 Independent variables

Socio-demographic factors

Age, sex, marital status, qualification, position in the organization and level of hospital

Organizational factors

Administration support, colleague support, time availability, and incentive for staff

Characteristic of individual

Communication character, awareness on best evidences, knowledge on research evidence, salary, place of graduation.

Characteristic of research evidence

Way of presentation, understandability of research report, availability, and accessibility of research reports

4.7. Data collection, data processing, and analysis

4.7.1 Data collection instruments

For quantitative data

The data was collected using pre-tested semi-structured questionnaire adapted version of Funk's BARRIERS scale to measure nurse's perceived barrier of research utilization and Friedman's test was used to measure knowledge of respondents.

This questionnaire included the 29-item barrier scale to research utilization. This scale asked the nurses to rate the extent to which they supposed each item as barrier to nurse's use of research evidence to change or improve their practice.

The questionnaire was prepared in English language. The first part of the questionnaire contained items, which measure socio-demographic characteristic of the respondents. The second part of the questionnaire contained questions about awareness and knowledge on evidence based nursing practice. The third part of the questionnaire contained questions about the evidence practice activities. The fourth part of the questionnaire contained questions about source of information and availability of information resources. Part five of the questionnaire contained the 'BARRIER' scale, which measured the nurse's perception on barriers of research evidence utilization. The 'BARRIER' scale was divided into four parts (subscales). Characteristic of the adopter(nurse's value, skills, and awareness), characteristic the organization (setting, barriers and limitation), characteristic of the innovation (qualities of the research) and characteristic of the communication (presentation and accessibility). The subscales cronbatch's alpha values were 0.85 for presentation scale, 0.79 for nurse subscale, 0.82 for setting subscale and 0.86 for research(innovation) subscale.

For qualitative data

In-depth interview was conducted on 8 individuals, 4 individuals from JUSH and the rest 4 from the district hospitals. Principal investigator interviewed all the interviewees, took hand note and tape record.

4.7.2. Data collectors

Six diploma nurses were recruited for facilitating data collection. Data collectors were trained for one day intensively on the study, confidentiality of the information and informed consent.

4.7.3 Data quality control

Questionnaire was adapted from valid sources (Funk's BARRIERS scale and Friedman's test). Trained data collectors facilitated data collection after pre-test has been done on 17 nurses of Bedele hospital. Minor correction on questionnaire was done after pre-test of the questionnaire. Data collectors were supervised in issues of correct data collection procedures. To ensure anonymity, code numbers were placed on the completed questionnaire after they returned to the investigators.

Data quality assurance for qualitative data

Trustworthiness of qualitative data was enhanced by preventing premature closing interview.

4.7.4 Data processing and analysis

The quantitative Data was carefully entered into Epidata V3.1, edited and cleaned for inconsistencies and missing values. Data was analyzed using SPSS version 16.0. Descriptive statistic was used to summarize data. Bivariate Correlation analysis was done to assess the association between dependent variable and independent variables. Simple and multivariable linear regression was used to assess the association between dependent variable and independent variables. The variable with p-value less than 0.05 was taken as having significant association.

The qualitative data was transcribed manually from the audio records and the notes taken. Results was analyzed manually and written by summarizing the idea taken from the participants. Thematic framework analysis was done.

4.9 Operational definition

Implementation of evidence-based nursing practice is the act of guiding nursing care practice using scientifically proven nursing research. The scale that measured implementation of EBP in this study was included seven items with minimum score of 7 and maximum score of 35. More over the score on implementation of evidence based nursing practice (EBNP) was transformed into tertile classification. The higher the score the higher the implementation of EBNP.

Awareness on evidences based practice: - the subjective familiarity status on evidences based practice concept (in this study reported by 1 not at all familiar to 5 completely familiar).

Knowledge about research concepts: - the awareness about research concepts measured by objective method using Friedman's test (seven items). Evaluated by giving 1 for correct answer

and 0 for incorrect answer. The score added together and tertile classification was done. Accordingly low, medium, and high knowledge level was produced.

Communication characteristic: - nurses distinct information searching attribute measured by frequency of looking for information from a given source and place where they get.

Availability of information resources: - reported Availability of information resources measured by degree of availability (extent 1= totally unavailable, 4= more than available).

Understandability of research terms: - the perception held on Understandability of research terms that how well understandable the research terms is that was measured by extent (1 to no extent, 5 to very great extent)

Availability of research articles: - reported Availability of research articles measured by degree of availability (1 to no extent, 5 to very great extent).

Clinical guideline: - bring together the best available evidence ideally using a transparent and rigorous approach and, from this develop practical guidance for professionals.

4.8 Ethical considerations:-

Ethical clearance was obtained from ethical committee of JU (IRB), college of public health and medical science. A formal letter, from the college of public health and medical science of Jimma University was obtained and submitted to Jimma Zone health office and concerned bodies to obtain their cooperation. The purpose of the study was explained to the participants at the time of data collection and written consent was obtained from the participants to confirm whether they will participate or not. The participants of the study were informed that the participation was voluntary based. Confidentiality of the response was ensured throughout the study.

4.9 The dissemination plan

The finding of this study will be presented to JU, distributed to Jimma zone health department, Jimma town health office and other organizations working on related area. Again the study finding will be disseminated to the Limmu-Genet hospital, Shenen-Gibe hospital, Agaro hospital, and other relevant bodies. The finding may also be presented on different seminars, meetings, and workshops. All effort will be made to publish the research finding in research journals.

CHAPTER FIVE: - RESULTS

The questionnaires were distributed to the 333 sampled nurses working in Jimma zone public hospitals. 302 nurses returned the questionnaires, indicating 90.6% response rate.

5.1 socio-demographic characteristic

Out of 302 respondents 172 were male. The mean age was 27 years ($SD \pm 6.154$), minimum age 19 and maximum age 58 years old. Majority were single 178 (58.9 %). About 177(58.6 %) of respondents were diploma holders. About 145(48.0%) of respondents were Graduated from Government higher institution and the rest were graduated from private institutions. About 274(90.7) were in staff nurses and the rest 28(9.3%) were in different managerial position.

Table 1:- Distribution of respondents by their socio-demographics characteristic, in Jimma zone public hospitals, Jimma, southwest Ethiopia, 2015

Characteristics		N	%
Sex	Male	172	57.0
	Female	130	43.0
Qualification	Diploma	177	58.6
	B.Sc. nurse	121	40.1
	Masters	4	1.3
Marital status	Ever Married	124	41.1
	Single	178	58.9
working hospital	JUSH	253	83.8
	Shenen-Gibe	16	5.3
	Limmu-Genet	19	6.3
	Agaro	14	4.6
Place of graduation	Government institutions/universities	145	48.0
	Private institutions/universities	157	52.0
Position in the hospital	Staff position	274	90.7
	Managerial position	28	9.3

The salary of respondents was classified into 3 based on tertile classification.

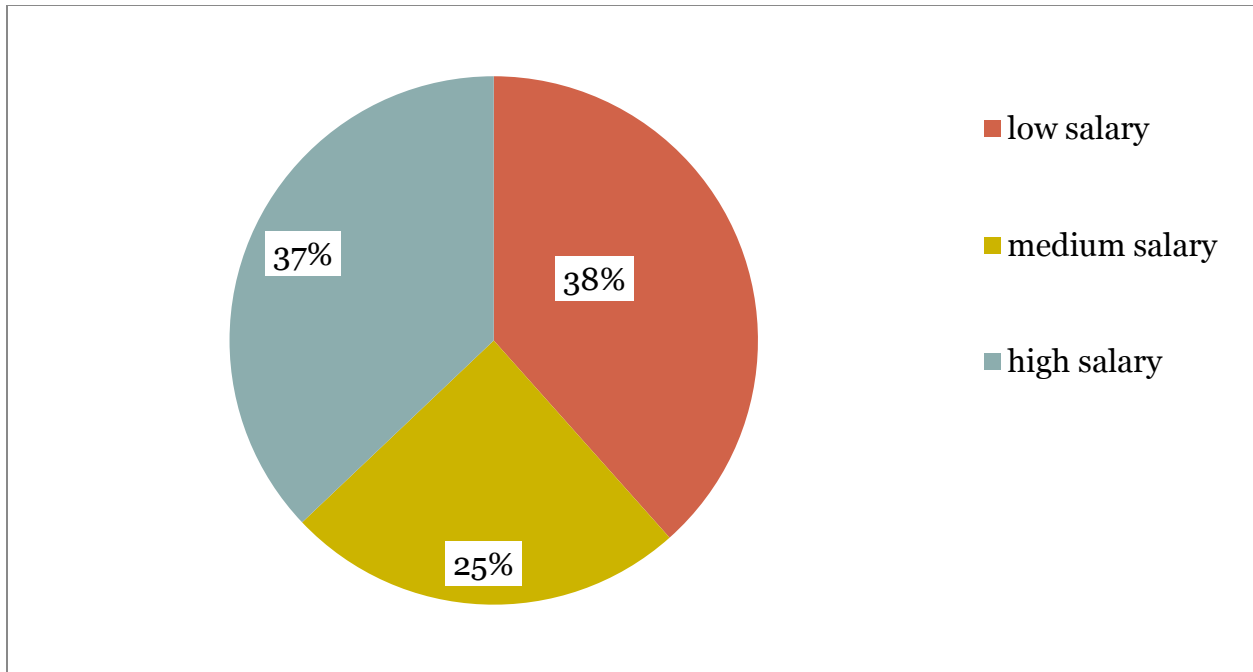


Figure 3 Distribution of the respondents by their salary tertile of nurses working in Jimma zone public hospitals Jimma southwest Ethiopia may, 2015

5.2 Awareness and Knowledge about evidence-based practice

When the respondents were asked how familiar they were, about 190 (62.9 %) were familiar with the concept of EBP.

When the respondents asked knowledge questions concerning research concept and research terms about 82 (27.2%) of respondents scored low level, about 78(25.8%) of respondents scored medium level and about 92(30.5%) of respondents scored high level.(based on tertile classification)

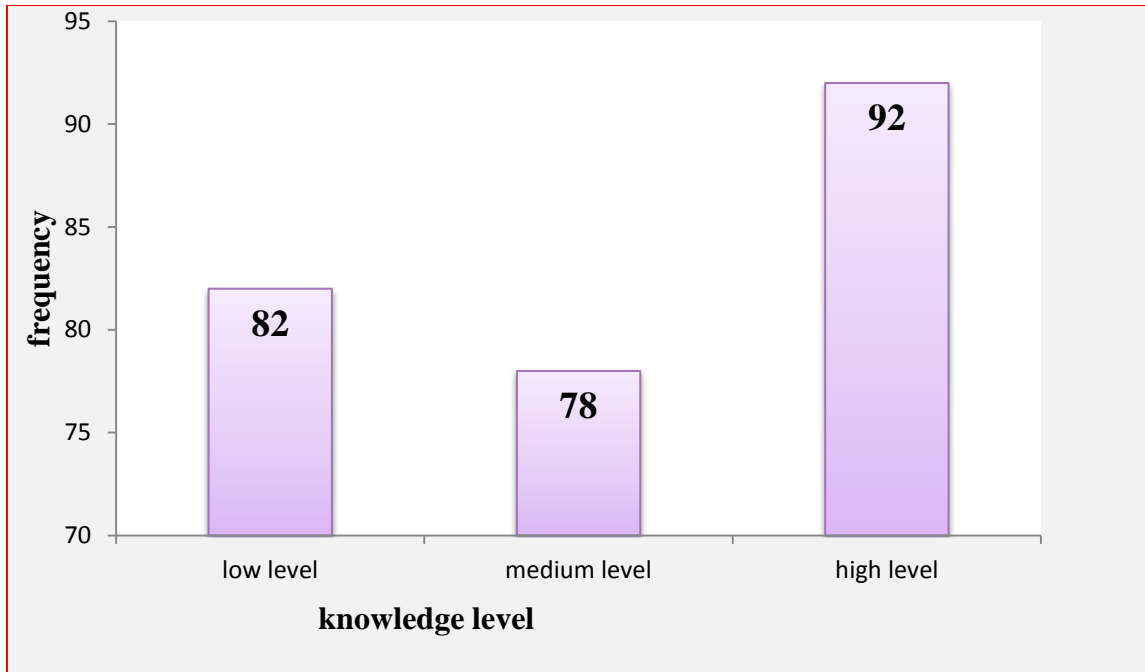


Figure 4:- distribution of respondent's by their knowledge tertile, in Jimma zone public hospitals, Jimma, southwestern Ethiopia, 2015

5.3 Source of information and availability of the information resource

Concerning the source of information and availability of the information resource, when asked how they evaluate the availability of information resource in the hospital only 85 (28.1%) said that online resource were available and 76(25.2%) said that print material were available.

Major Source of information that respondents usually find evidence for their nursing care practice was internet 118(39.1%).

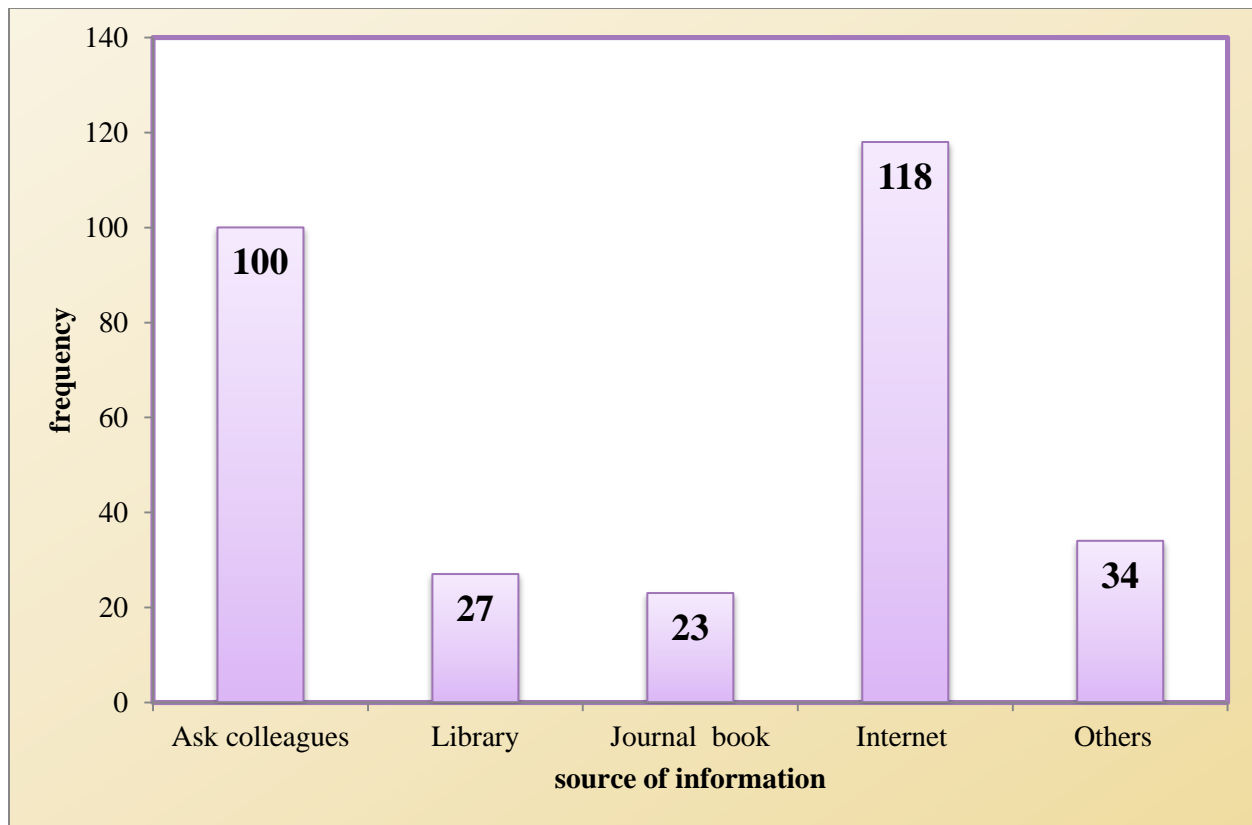


Figure 5:-distribution of respondent's by their usual source of information for looking new evidence, in Jimma zone public hospitals, Jimma, southwestern Ethiopia, 2015

When asked how often they look for information from the given sources, about 135(44.6%) were using reference book, about 40(13.2%) were using research report, about 36(11.9%) were using Journal article and about 41(13.5%) were using hospital library on the regular bases.

5.4 level Evidence based practice activity

Respondents were asked for their involvement in different activities EBP over the last two months about.

Table 2 distribution of respondents by their involvement in EBP activities, Jimma zone public hospitals, Jimma, southwestern Ethiopia, 2015

Activities	Never		Seldom		Occasionally		Regularly		Often	
	N	%	N	%	N	%	N	%	N	%
Asked clinical question r	119	39.4	24	7.9	80	26.5	54	17.9	25	8.3
Look for(searched) evidence	157	52	45	15	79	26	8	2.6	13	4.3
Read any evidence	107	35.4	29	9.6	68	22.5	71	23.5	27	8.9
Critically appraised evidence	122	40.4	40	13.2	53	17.5	57	18.9	30	9.9
Used current evidence	122	40.4	35	11.6	58	19.2	60	19.9	27	8.9
Evaluated the outcome	117	38.7	43	14.2	61	20.2	50	16.6	31	10.4
Teaching new evidence to others	120	39.7	50	16.6	62	20.5	44	14.6	26	8.6

As shown in table 3 above from the total 302 participants 245 (81.1%) had involved in different EBP activities to different level (from seldom to often). Total score was computed for individuals total score in EBP and Tertile classification was done on the total score of EBP activity measurements. Accordingly about 45(18.4%) of the respondents were implemented EBP to low level (sometimes), about 103(42%) of respondents were implemented EBP to medium level and about 97(39.6%) of respondents had implemented EBP to high level.

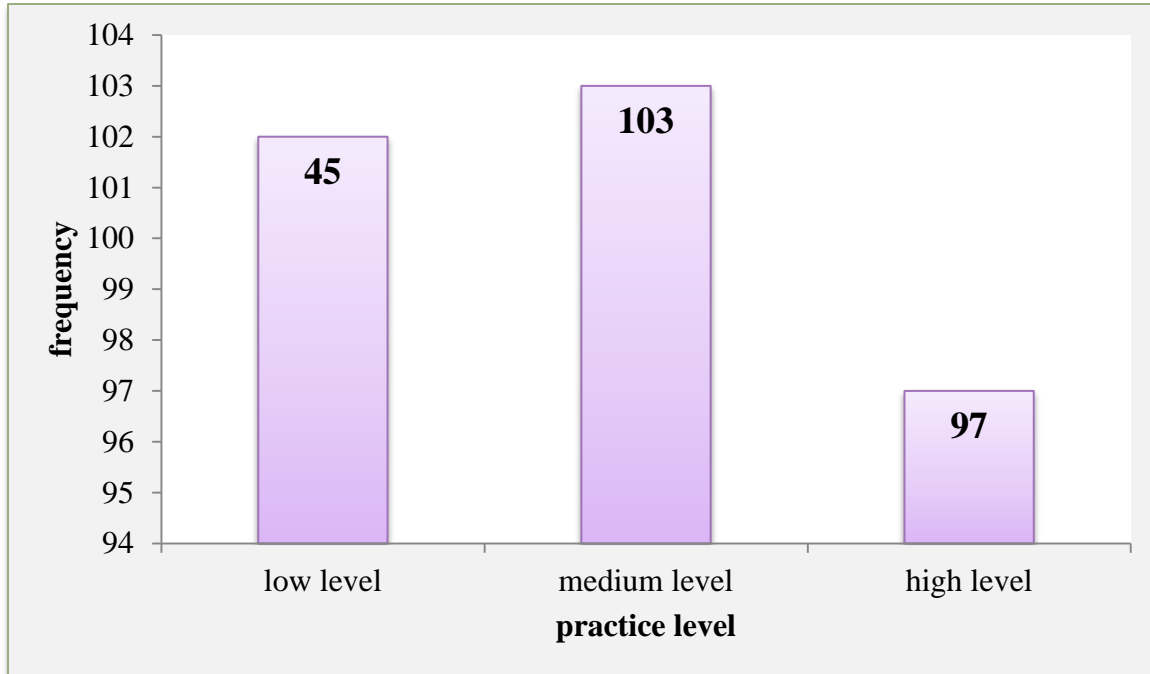


Figure 6:-distribution of respondents by their EBP practice level in tertile classification, Jimma zone public hospitals, Jimma, southwestern Ethiopia, 2015

5.5 Perceived Barriers to Research Utilization.

The top 5 perceived barriers reported in this study were (1) ‘Physician doesn’t not cooperate with implementation of new evidences’. (2) ‘The nurse is isolated from knowledgeable colleagues with whom to discuss new findings’. (3) ‘There is not incentive for clinical practice development’, (4) ‘The nurse feels the benefit of changing practice is minimal’ and (5) There is resistance to make change in the work setting (Table 9). Since 60% of this perceived barrier is from setting origin, Largest perceived barrier was organizational factors (mean =26.60, ±7.08)

Table 3: the mean and standard deviation of perceived factors for research utilization in Jimma zone public hospitals, Jimma, southwestern Ethiopia, 2015

Category of perceived factors	Mean	Std. Deviation
Setting characteristic	26.6	7.08
Nurse characteristic	20.45	5.79
Presentation characteristic	15.13	4.36
Research characteristic	10.11	3.32

Also this was supported by in-depth interview expressed by statements of interviewee touched issue like Management support, Time excess, workload, Nurses' Willingness to perform new procedure to patient care, nurse's ability in finding new procedure, nurses communication skill with nurses and physicians can influence using new best research finding''

e.g. *'... I am involved for that evidence confirmed by FMOH and applied to hospital, but other issues like reference materials based on research findings, current guidelines, and standards recommended procedures. Factors, which demotivate us from using new evidence, are staff demoralization, communication barriers between staff, patient preference of old way/drugs of treatment. Incentive for staff, organizational procedures which utilize new evidences are enablers.'* [Participant 1 Age 35, male, MSc nurse]

'...I 'm somewhat familiar with evidence based practice concepts, I think Personal experience of nurse, knowledge of nurse on research language, the accessibility of new evidence and educational status of an individual, professional communication of nurses and physicians will all contribute to the application of new research evidence.' [Participant 2 Age 31, male, B.Sc.N].

5.6 Factors Associated With implementation of evidence based nursing practice

Factors associated with implementation of EBNP were assessed and the significant association was found between knowledge about EBP and implementation of EBP. Knowledge about EBP was positively associated with EBNP implementation ($\beta=0.76$, $P=0.008$). For a unit increase in knowledge about research, implementation of EBNP increases by 0.762. Similarly, Place where the respondent graduated was positively associated with evidence based practice ($\beta=2.270$, $P=0.047$). Graduating from public universities increases evidence based practice by 2.270. Another positively associated variable is extent of resources availability such as internet services (online resource), print materials and other information resources (such knowledgeable colleagues) ($\beta =0.67$, $P= 0.006$). Availability of information resource such internet access increases the utilization of EBP by 0.67.

Supportive ideas from in-depth interview by most participants touched points like Organizational issue, Resource related issue, Policy related issue, and Nurse's attributes as strong factors for application of new evidences in patient care procedures. For example

‘...I am familiar with the concept of evidence based practice, I think the problem to use new innovations are nurse’s ability, nurse’s skill, knowledge on research methodology nurse’s willingness to read different information and implement ,resources such internet access, journals, manuals, nurses communication skill with nurses and physicians...’ [Participant1 Age 33, male, BSc nurse]

‘...I didn’t learn it during my school training but I use new guidelines, ward protocols/procedures. I believe that applying new best research finding will improve patient care outcomes. And I think factors like our Personal attributes I mean knowledge of nurses on research methodology, inter-professional Relationships specifically communication skill with nurse and doctors and our hospital rule all affects ...’ [participant 2 Age 31, male, BSc nurse.]

‘...I am familiar with the idea of evidence based practice but we in our system not reasonably using EBP always during patient care procedures, bedside discussion, I think reasons like nurse’s knowledge on research, access to internet facilities, availability of new guidelines, and hospital culture will enhance in their excesses.[participant 3 age 45,male, MSc nurse]

‘...I’m familiar with evidence based practice but I think our Hospital Policy does not permit us to conduct procedures that is not recognized by the hospital protocol of care procedures, so in my opinion the major basic issue to use EBP is nurse confidence and knowledge on research... ’ [participant 4 age 35, sex female, BSc. Nurse]

Table 4:- Multivariable linear regression final model

Model	Unstandardized Coefficients		P	95% Confidence Interval for B	
	B	Std. Error		Lower Bound	Upper Bound
Knowledge score	0.762	0.285	0.008**	0.201	1.322
Sex					
Male	0.123	0.901	0.892	-1.652	1.897
Female (Ref.)					
Place of graduation					
Public	2.270	1.137	0.047*	0.031	4.510
Private(Ref.)					
Familiarity to EBP	1.124	1.104	0.310	-1.051	3.298
nurse subscale	0.090	0.074	0.227	-0.056	0.236
Level Nurse Education	0.528	1.165	0.651	-1.768	2.823
availability of resource	0.675	0.244	0.006**	0.195	1.156

Maximum VIF = 1.882, adjusted R² = 0.084

CHAPTER SIX

DISCUSSION

Participants in this study involved in each activities of EBP with different levels of involvement, but for simplicity the score was summed up and transformed into tertile classification. Accordingly about 45 (18.4 %) of the respondents had implemented EBP to low level (sometimes), about 103 (34.1%) of respondents had implemented EBP to medium level (usually) and 97(32.1 %) of respondents were implemented EBP to high level (always).

This finding was consistent with the study done in Sweden by Bostrom et al, in which (60%), approximately similar level of EBP implementation was reported(19% asked clinical questions and performed searches in data bases, 56% used information sources, 31% appraised the literature, 30% participated in practice development and 34% participated in evaluating clinical practice to high extent)(9, 13). Also finding from this study was analogous with the study conducted in South Africa, in which 35.6%, 32.9%, and 31.5% use EBP frequently, moderately and rarely, respectively. Even though in this study small numbers of respondents were frequently involved in EBP about (18.4 %), the finding is similar with finding from South Africa.

On the other hand the finding from this study is higher than the study done in Tikur Anbesa hospital in Addis Abeba, in which 57.6% participants applied EBP. Of them 64 (52.8%), 38(31.4%) and 19(**15.7%**) applied EBP sometime, usually and always respectively(22) .

This could be due the sample size difference. In this study the sample is somewhat higher than the study done in Tikur Anbesa hospital. The other possible justification may be In Jimma university specialized hospital there is nursing care standardization program that may increase nurses' application of new research evidence in their nursing care practice.

Concerning Perceived barriers to research utilization from the top 5 reported barriers 3 were setting related barriers i.e. about 60% were from organizational factors. Therefore the greatest perceived factor was organizational factors (mean =26.60, SD±7.08). This finding was similar with studies done in USA, China, Iran, Maldives, German, and Australia.in addition had Organizational factor has been consistently reported as greatest perceived factor. On the other hand when we compare top 5 perceived barriers to research utilization with seven other studies (in table 5 on annex) except this study most of the studies reported that 'insufficient time to read and implement new idea' was the most reported barrier (6, 15, 17, 23, 24, 25, 26, 12, 27).

In this study Knowledge about EBP was positively associated with EBP implementation ($\beta=0.76$, $P=0.008$). This finding was similar in pattern with study done in USA where Nurses who reported having greater knowledge of EBP also reported a greater extent of evidence-based care ($r=0.42$, $p < .0001$) (21). Similarly The study done in Iran is in line to this finding where Nurses who knew the definition of evidence-based nursing were more likely to utilize research findings in clinical practice than those who did not know (Pearson $\chi^2 = 23.912$, $P = 0.02$)(17). Similarly In our country one study that was conducted in Tikur Anbesa hospital reported that those nurses who have knowledge were 3 times more likely to practice EBP than those who don't have knowledge (22).

Implication for practice, policy and nursing programs

In this study small number of nurses applied EBP to high level (frequent basis). This means most of nurse in Jimma zone public hospital uses traditional way of practice that means depends on the expert opinion and school training, which may be out to date way of practice, which delays the latest way of patient care approach, which enhances the progress of patient outcomes. Since the use of evidence-based practice delivers the positive patient care outcomes nurse in in Jimma zone public hospitals should implement EBP in their nursing care practice to positive patient care outcomes. It is very much important to consider nursing care policy and nursing curriculum issues so that curriculum planners should strictly emphasize on EBP philosophy during program preparation. Nursing care policy should empower nurse so that nurses autonomously implement EBP during nursing care practice. Other area that should be considered is educational preparation for nurse particularly in private institutions or colleges. Private nursing college should comply all the issue incorporated in Ethiopia nursing education programs so that graduate from private institution be competent in implementation of research findings in the their nursing care practice.

Limitation of the study

Since this study was based on self-report the response on the EBP practice may be inflated due to social desirability bias of respondents.

CHAPTER SEVEN

CONCLUSION AND RECOMMENDATION

7.1 Conclusion

This study concluded that small number of nurses applied EBP to high level. Organizational factors were found to be the greatest perceived barrier. The implementation of evidence-based practice was associated with knowledge on research, place of graduation, and the availability of information resources. The level of perception and level of EBP implementation was not associated.

7.2 Recommendation

There has to be intervention program to facilitate the implementation of evidence in nursing practice by the respective stakeholders (Ethiopian federal ministry of health, Oromia regional health bureau, educators of nursing education and hospital administration of Jimma zone public hospitals).

Training should be conducted for nurses on implementation of evidence-based practice by Jimma zone public hospitals in collaboration with NGOS, Ethiopian federal ministry of health and Oromia regional health bureau.

Resources necessary to implement evidence based nursing practice should be provide by hospital administration of Jimma zone public hospitals in collaboration with Ethiopian federal ministry of health, Oromia regional health bureau and other NGOs

Intervention programs concerning organizational communication with issue evidence based practice implementation should be done together with nurses and physician to create supportive staff by hospital administration of Jimma zone public hospitals.

Since there is gap of awareness on evidence based nursing practice curriculum planners should take into consideration to include the principle of evidence based nursing practice in Ethiopian nursing education programs especially in the undergraduate nursing education curriculum.

Private nursing colleges should incorporate principles of Evidence based practice in their nursing education programs so that graduates from private nursing college should be competent.

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ANNEXES

Annex 1; - questionnaire

Letter of Information about the Study

Dear colleague!

I am MSc student in the school of graduate studies of Jimma University in department of Nursing. I am conducting this study in partial fulfilment of the requirements for the Degree of **Masters in Adult Health Nursing**. My proposal has been approved by the Institution Review Board JUCPHMS. I have also received ethical approval from the University to conduct this study. Dear colleague, I will invite you to participate in this study. The participation is voluntary based. The purpose of the study is to assess the utilization of evidence based practice and its associated factors among nurses working in Jimma zone public Hospitals.

It is also assured that the **information you provide** would be used for research purposes only and would be treated as **confidential** and **participation is completely voluntary**.

Consent form

I have read the information on the title and aim of the study given above. The title and aim of the study was clear to me. I understood that participation in this study is completely voluntary and that if I want to withdraw from the study any time, I will not obliged to continue and I will withdraw from it at any time. I understand that there is no risk associated with participating in this study. So, I agree to this. Hereby I can give informed consent to participate to this study.

Signature of volunteer _____ Date _____

Principal Investigator: Dawit Hoyiso

Thank You for your cooperation

Part I: Socio- Demographic information.

Instruction: Please encircle the number in front of the option you choose& fill in the blank space that best describe you on the right side of the table.

Code	Item	Coding categories of responses		
A1	Sex	Male[1], female[2]		
A2	Age	_____ years old		
A3	Level of nursing education	[1]Diploma nurse [2] BSc. Nurse [3] masters nurse		
A4	Primary work area in the hospital	<table border="0" style="width: 100%;"> <tr> <td style="vertical-align: top; width: 60%;"> 1. Medical ward 2. Surgical ward 3. ICU 4. Recovery unit 5. MCH 6. Operation room 7. Psychiatry ward 8. Pediatrics unit 9. Gynecology ward </td> <td style="vertical-align: top; width: 40%;"> 10. Ophthalmology 11. Chronic illness <input type="checkbox"/> ART <input type="checkbox"/> TB <input type="checkbox"/> DM/Cardiac/HTN 12. Dental unit 13. OPD 14. Minor OR 15. Other (Specify) _____ </td> </tr> </table>	1. Medical ward 2. Surgical ward 3. ICU 4. Recovery unit 5. MCH 6. Operation room 7. Psychiatry ward 8. Pediatrics unit 9. Gynecology ward	10. Ophthalmology 11. Chronic illness <input type="checkbox"/> ART <input type="checkbox"/> TB <input type="checkbox"/> DM/Cardiac/HTN 12. Dental unit 13. OPD 14. Minor OR 15. Other (Specify) _____
1. Medical ward 2. Surgical ward 3. ICU 4. Recovery unit 5. MCH 6. Operation room 7. Psychiatry ward 8. Pediatrics unit 9. Gynecology ward	10. Ophthalmology 11. Chronic illness <input type="checkbox"/> ART <input type="checkbox"/> TB <input type="checkbox"/> DM/Cardiac/HTN 12. Dental unit 13. OPD 14. Minor OR 15. Other (Specify) _____			
A5	Years of experience	_____ years of experience		
A6	Where did you graduated from	[1], Government university/college [2] Private colleges, [3], Others		

Part II Questions concerning awareness and knowledge about evidence based practice

Code	Items (awareness)	Reponses and coding	Skip
B1	How familiar are you with evidence-based practice?	[1], Not at all familiar, [2], To little extent ,[3], To moderate extent [4], To great extent , [5], Completely familiar	If [1] skip to C1

About knowledge: - Choose the best response to you concerning EBNP

Code	Items	Reponses and coding
B2	A good clinical question consists of an intervention, target population, outcome, and comparison of intervention In PICOT format	[1] yes, [2] no [3] I don't know
B3	Databases of primary medical literature, such as Medline/PubMed generally contain a Compilation of only high quality evidence	[1] yes, [2] no [3] I don't know
B4	An electronic database such as PubMed can only be accessed from hospital and university libraries	[1] yes, [2] no [3] I don't know
B5	The Cochrane Database is a good place to look for reviews of high quality research based on clearly stated criteria, in many areas of clinical practice	[1] yes, [2] no , [3] I don't know
B5	Confidence intervals are a measure of clinical significance, and provide a way of estimating where the 'true' result for any population lies	[1] yes, [2] no , [3] I don't know
B6	The p-value is a measure of reliability	[1] yes, [2] no, [3] I don't know
B7	Single case designs are regarded as a similar level of evidence to randomized controlled trials	[1] yes, [2] no , [3] I don't know

Part III Evidence based practice activity questions

Ser. no.	Activities (How often have you personally involved in the following activities?)	Frequencies [1] Never, [2] Seldom(<1/month), [3] Occasionally(1-2times/month), [4] Regularly(weekly), [5] Often (several times/week)
C1	Asked clinical questions related with your nursing care practice over the past two months?	[1], [2], [3], [4], [5]
C2	Look for information, research, evidences, to support your nursing practice over the past two months	[1], [2], [3], [4], [5]
C3	Read any evidence to support/guide nursing care practice over the past two months	[1], [2], [3], [4], [5]
C4	critically appraised any evidence which answers your clinical questions	[1], [2], [3], [4], [5]
C5	Used current evidence/guideline to guide the nursing care practice over the past two months	[1], [2], [3], [4], [5]
C6	Evaluated the outcome of using current evidence	[1], [2], [3], [4], [5]
C7	Teaching others about new way of practice[current guideline to guide the nursing care practice]	[1], [2], [3], [4], [5]

Part IV source of information and availability of the information resource

D1	When you need information where do you usually find it?	[1], I ask my colleagues, [2], from library, [3], Journal or books [4], I search internet, [5], others
----	---	---

How often do you personally look for information from the following sources?

Source of information	Frequency for looking from given sources				
	Not at all	monthly	weekly	daily	Many times daily

D2	Reference book	[1]	[2]	[3]	[4]	[5]
D3	Research report	[1]	[2]	[3]	[4]	[5]
D4	Journal article	[1]	[2]	[3]	[4]	[5]
D5	Hospital library	[1]	[2]	[3]	[4]	[5]

Generally how do you evaluate the availability of the following information resource in your workplace?

	Source of information	Availability			
		Totally unavailable	Less than available	Available	More than available
D6	Print material	[1]	[2]	[3]	[4]
D7	Online resource	[1]	[2]	[3]	[4]
D8	Other information resource	[1]	[2]	[3]	[4]

Part V barriers scale: - Articles in nursing journals indicate that nurses in clinical exercise

/ during nursing care practice do not use the new best findings of research to guide their nursing care practice. We have an expectation that there might be a number of reasons for this. We would like to know the extent to which you think each of the following situations is a barrier to nurse's use of research to enhance their practice. The nurse refers to you as a respondent. For each item cross the response that represents your view.

Code	Items (barriers)	Perceived extent of barriers				
		To no extent	To little extent	To moderate extent	To great extent	To very great extent
E1	Research reports/articles are not readily	1	2	3	4	5

	available(insufficient evidence)					
E2	Inability to implement recommendations	1	2	3	4	5
E3	Statistical analysis are not understandable	1	2	3	4	5
E4	The research is not relevant to the nurse's practice	1	2	3	4	5
E5	Inadequate understanding of research terms used in research articles	1	2	3	4	5
E6	Insufficient time at work place to implement new ideas	1	2	3	4	5
E7	The nurse feels the benefit of changing practice will be minimal	1	2	3	4	5
E8	The nurse is uncertain whether to believe the result of the research	1	2	3	4	5
E9	The research has methodological inadequacies	1	2	3	4	5
E10	The nurse does not feel she/he has enough authority to change pt. care procedures	1	2	3	4	5
E11	The nurse feels results are not generalizable to own setting	1	2	3	4	5
E12	The nurse is isolated from knowledgeable colleagues with whom to discuss the research/current evidence	1	2	3	4	5
E13	Physician will not cooperate with implementation of new evidences	1	2	3	4	5
E14	The nurse does not see the benefit of research for practice	1	2	3	4	5
E15	There is not a documented need to change to change practice	1	2	3	4	5
E16	The conclusion drawn from the research are not justified	1	2	3	4	5

E17	The literature reports conflicting results	1	2	3	4	5
E18	The research is not reported clearly and readably	1	2	3	4	5
E19	Other staffs are not supportive of implementation of new ideas	1	2	3	4	5
E20	The nurse is unwilling to change/try new ideas	1	2	3	4	5
E21	The amount of information is overwhelming	1	2	3	4	5
E22	The nurse does not feel capable of evaluating the quality of the research	1	2	3	4	5
E23	The nurse does not have computer skill	1	2	3	4	5
E24	There is resistance to make change in the work setting	1	2	3	4	5
E25	The rewards for using research results are not worthwhile	1	2	3	4	5
E26	The administration perceived EBP as a low management priority	1	2	3	4	5
E27	There not incentive for clinical practice development	1	2	3	4	5
E28	Research reports are published in foreign language	1	2	3	4	5
E29	Other you think as barrier	1	2	3	4	5

Thank you for completion

Table 5 rank order of perceived barrier of EBP utilization

Rank order	Subscale	Barrier item	Item mean score
1	S	Physician will not cooperate with implementation of new evidences	2.79

2	N	The nurse is isolated from knowledgeable colleagues with whom to discuss	2.75
3	S	There is not incentive for clinical practice development	2.74
4	N	The nurse feels the benefit of changing practice will be minimal	2.71
5	S	There is resistance to make change in the work setting	2.70
6	S	Insufficient time at work place to implement new ideas	2.69
7	S	The rewards for using research results are not worthwhile	2.67
8	R	Inadequate understanding of research terms used in research articles	2.66
9	S	The administration perceived EBP as a low management priority	2.65
10	P	The research is not relevant to the nurses practice	2.64
11	S	The nurse feels results are not generalizable to own setting	2.64
12	R	The conclusion drawn from the research are not justified	2.62
13	S	The nurse does not feel she/he has enough authority to change pt. care practice	2.62
14	P	The research is not reported clearly and readably	2.60
15	N	There is not a documented need to change practice	2.60
16	S	Other staffs are not supportive of implementation of new ideas	2.59
17	N	The nurse is unwilling to change/try new ideas	2.58
18	P	Research reports are published in foreign language	2.56
19	R	The nurse does not see the benefit of research for practice	2.55
20	P	The literature reports conflicting results	2.53
21	R	The amount of information is overwhelming	2.52

22	N	The nurse does not have computer skill	2.52
23	P	Statistical analysis are not understandable	2.50
24	N	The nurse does not feel capable of evaluating the quality of the research	2.49
25	R	The research has methodological inadequacies	2.44
26	N	The nurse is uncertain whether to believe the result of the research	2.43
27	N	Inability to implement recommendations	2.34
28	P	Research reports/articles are not readily available(insufficient evidence)	2.17

Annex 3:- Top 5 perceived barriers compared to other 7 studies see annex 4

Author/year/ Location	Sample	Greatest barrier	2nd Greatest barrier	3rd Greatest barrier	4th Greatest barrier	5th Greatest barrier
This study /2015/ Jimma	333	Physician doesn't cooperate with implementation of new evidences (S)	The nurse is isolated from knowledgeable colleagues with whom to discuss(N)	There is not incentive for clinical practice development (S)	The nurse feels the benefit of changing practice will be minimal(N)	There is resistance to make change in the work setting (S)
Funk et al. (1991a)/ USA	924	The nurse does not feel she/he has enough authority to change patient care procedures (S)	There is insufficient time on the job to implement new ideas (S)	The nurse feels The nurse is unaware of the research (N)	Physicians will not co-operate with implementation (S)	Administration will not allow implementation (S)
Dunn et al.	316	There is	Statistical	Physicians will	The nurse does	The relevant

(1998)/ UK		insufficient time on the job to implement new ideas (S)	analyses are not understandable (P)	not co-operate with implementation (S)	not feel capable of evaluating the quality of the research (N)	literature is not compiled in one place (P)
Kajermo et al. (1998)/ Sweden	363	Research reports/ articles are not available (P)	The facilities are inadequate for implementation (S)	The nurse is isolated from knowledgeable colleagues with whom to discuss research (N)	The nurse does not have time to read research (S)	The relevant literature is not compiled in one place (P)
Retsas and Nolan (1999)	149	There is insufficient time on the job to implement new ideas (S)	The nurse feels. The nurse is unaware of the research (N)	The facilities are inadequate for implementation (S)	Physicians will not co-operate with implementation (S)	Not feel she/he has enough authority to change patient care rocedures (S)
Parahoo (2000)/ Northern Ireland	1368	The nurse does not feel she/he has enough authority to change patient care procedures (S)	Statistical analyses are not understandable (P)	There is insufficient time on the job to implement new ideas (S)	Administration will not allow implementation (S)	The nurse feels that the results are not generalizable to town setting (S)
Bryar et al. (2003)/ UK	2009	There is insufficient time on the job to implement new ideas (S)	Statistical analyses are not understandable (P)	The facilities are inadequate for implementation (S)	The nurse does not feel she/he has enough authority to change p.t care procedures (S)	Physicians will not co-operate with implementation (S)
Mehrdad et al. (2008) Iran	410	The nurse does not have time to read research (S)	facilities are inadequate for implementation (S)	Nurse does not feel she/he has enough authority to change patient care procedure (S)	The nurses are less involved in the research (S)	There is insufficient time on the job to implement new ideas (S)

N=nurse related factor, S= setting related factor, P= presentation related factor, R research related factor.

In-depth Interview guide

1. How are you familiar with the concept of EBP?
2. Do you think that EBP can enhance quality of care?
3. How often have you personally involved in EBP?
4. How have you been guiding your nursing care practice?
5. What kind of evidence are you using in your nursing care practice?
6. Where do you get the evidence to guide nursing care practice?
7. Can you elaborate what the barriers are which hinders using EBP?
8. Can you elaborate what the Enablers (facilitators) of evidence-based nursing practice?
9. Would you add anything additional?