Effectiveness of Midwifery Case Management (MCM) Software on the Knowledge of Obstetrical/Midwifery Management among Trained Nurses & Midwives

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Abstract

Labour is a short but critical period in the life of the mother and infant. The provision of high quality care in labour is essential. All pregnant women are at risk of obstetrical complications and most of these occur during labour and delivery that sometime can lead to maternal death. It is important to constantly check the condition of the mother and fetus, as well as the process of labour itself. MCM software on obstetrical management will be techno boosting software for all those trained midwives working at selected hospitals and managing obstetrical emergencies. The population consisted of 30 trained midwives working in maternity units who were selected using purposive sampling technique. Data were collected with the help of Self administered questionnaire. MCM software was installed and administered in their desktop computers at nursing stations of maternity units. The findings of the study revealed that majority of trained midwives i.e. 18(60%) were B.Sc. (N) whereas less than half i.e.9 (30%) samples were GNM and only 3(10%) were Post basic B.Sc. Nurses. 26(87%) of the trained midwives had 1-5 years of experience in maternity unit. Out of 30 trained midwives only 4(13%) were exposed to in-service education on obstetrical management. Mean knowledge score of pre test was 18.96 and after exposure to MCM the post test score was 28.43. Calculated mean difference was 9.47, SD 4.01, SE 0.73 and df was 29, the paired t test value ($t_{29} = 12.97$) was significant at $p \leq 0.001$ level. This indicated that there is significant difference between the pre test and post test knowledge level of trained midwives at the level of $p \leq 0.05$.

Keywords: Trained Midwives, Obstetrical Management, Midwifery Case Management (MCM)

Background

The journey involved in labour and delivery is often described as the most hazardous or dangerous in our lives. Maternal health care means the difference between life and death for a pregnant woman. Ensuring that women everywhere, have access to such care could save hundreds and thousands of lives a year. With skilled care, common complications of pregnancy and labor can be safely managed. We do this by improving provider's clinical skill for managing cases. To reduce complications during pregnancy and labor it is essential to strengthen knowledge of the midwives & Nurses. Skilled midwives are valuable members of the community. They are more than a health care provider- they are educators, mentors and guardians of new life. **(Abhilasa 2008)[1]**

The 21st century is both an informative and knowledgeable age. Nursing and medical professions are facing the increasing usage of information technology in day-to-day operations with the overall aim of improving the quality of patient care. The quality of the future of the nursing profession is dependent on the caliber of those who are currently socialized to become professional nurses. This has implications for nurse education and the preparation of future nurses to acquire skills in Information and Communications Technology. **(Willmer, m. 2007)[2]**

Need of the Study & Literature Review

Every day, approximately 800 women die from preventable causes related to pregnancy and childbirth. 99% of all maternal deaths occur in developing countries. Maternal

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mortality is higher in women living in rural areas and among poorer communities. Skilled care before, during and after childbirth can save the lives of women and newborn babies. Between 1990 and 2013, maternal mortality worldwide dropped by almost 50%, yet maternal mortality is unacceptably high. In 2013, 289 000 women died during and following pregnancy and childbirth. Almost all of these deaths occurred in low-resource settings, and most could have been prevented. Regular contact with a doctor, nurse or midwife during pregnancy allows women to receive services vital to their health and that of their future children. More than a decade of research has shown that small and affordable measures can significantly; reduce the health risks that women face when they become pregnant. Most maternal deaths could be prevented if women had access to appropriate health care during pregnancy, childbirth, and immediately afterwards. **WHO Maternal Health (2014)[3]**

Providing knowledge to the professional nurse midwives with midwifery case management during pregnancy is the best means for reducing the number of maternal mortality rate and neonatal mortality rate. Midwives must therefore have adequate knowledge of the obstetrical/midwifery management that they can identify the emergency situation and provide immediate care. Thus overall aim of this study is to provide information for quick case management. Emphasis need to be laid on facilitating individual self care management skills through teaching regarding warning signs during pregnancy, skill and ability to take self care at home. **(free library.com, 2002)[4].**

Problem Statement

"A pre experimental study to evaluate the effectiveness of Midwifery Case Management (MCM) software on the knowledge of obstetrical/midwifery management among trained Nurses & midwives working in maternity unit in selected hospitals of Indore in the year 2014-2015."

Objectives

To assess the knowledge of trained midwives on obstetrical/midwifery management.

To prepare and administer MCM Software for trained midwives on obstetrical management.

To find the association between pre-test knowledge score and selected demographic variables on obstetrical/midwifery management.

To evaluate the effectiveness of MCM software for trained midwives on obstetrical/midwifery management.

To obtain the feedback from the trained midwives regarding the acceptance of the MCM software.

Hypotheses

H1: There is significant association between the pretest knowledge level and selected demographic variables of the trained midwives on obstetrical/midwifery management at the level of $p \leq 0.05$.

H2: There is significant difference between the pretest and posttest knowledge level of trained midwives on obstetrical/midwifery management at the level of $p \leq 0.05$.

Methodology

Research Design: A pre-experimental one group pretest, post- test research design was adopted to evaluate the effectiveness of Midwifery Case Management (MCM) software on the knowledge of obstetrical/midwifery management among trained midwives.

$O_1 \longrightarrow X \longrightarrow O_2$

Population: All Trained midwives working in maternity units of Indore.

Sampling Technique: Non-probability purposive sampling technique was used.

Sample Size: The sample comprised of total 30 trained midwives from selected hospitals of Indore.

Setting: The study was conducted in Choithram Hospital & Research centre & Bombay Hospital & Research centre, Indore.

Tool: The tool for Data collection, in this study consisted of three sections.

A. Socio-Demographic data of trained midwives - 5 items.

B. Self administered questionnaire regarding obstetrical/midwifery management, comprised of 45 items on selected aspects of midwifery management. The selected aspects are normal labor (15 items), LSCS (2 items), Disorders related to pregnancy (14 items), Normal new born (4 items), Drugs (10 items).The maximum total score of the questionnaire was 45. Score was graded as follows:

Excellent knowledge: 31-45

Good knowledge: 16-30

Deficit knowledge: 1-15

C. Opinionnaire on acceptability of MCM Software for trained midwives, comprised of 10 statements.

Validity: 7 experts of obstetric specialty validated the tools for its contents.

Reliability: The reliability score was calculated using Karl Pearson's Correlation Coefficient formula r = 0.77 (very strong positive relationship), which proved that the tool used was reliable.

Data Collection Procedure: Ethical consideration was fulfilled by taking written permission from the administrative authorities of the hospitals prior to the data collection. A total of 30 samples were selected for the study. Trained midwives were selected by purposive sampling based on inclusion criteria. Pre test was administered to trained midwives and data were collected with the help of structured questionnaire, with an average time of 25-30 minutes . Then MCM software was installed in the computers of nursing stations of labor wards, midwives were then informed about the points like: how to use MCM software & instructed to read & use this software thoroughly. On 8th day post test was conducted with the same tool to assess the gain in knowledge scores & structured opinionnaire to get the feedback of the participants on acceptability of the MCM software. The average time taken for the post test was 30-35 minutes.

Findings

Section I: Socio-demographic data of trained midwives.

The present study showed that among 30 Midwives, more than half i.e. 23(77%) were in the age group of 21-25 years. B.Sc. (N) 18(60%) outnumbered, 9(30%) GNM and 3(10%) Post basic (N) in professional qualification. As many as 25(83%) had total 1-5 years of professional experience, 5(17%) had experience between 6-10 years. Regarding exposure to in-service education on obstetrical management, only 4(13%) participants were exposed to in-service education whereas 26(87%) were not exposed to in-service education.

Section II: Assessment of pretest knowledge on midwifery management among trained midwives.

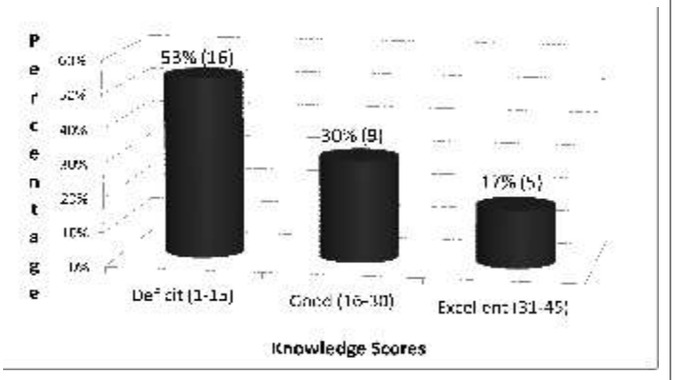

Fig 1 Cylindrical diagram showing Pretest knowledge score regarding midwifery management

The pretest knowledge score depicts that out of 30 participants, more than half i.e. 16(53%) had deficit knowledge (1-15 score), 9(30%) had good knowledge (16-30 score) and only 5(17%) had excellent knowledge (31-45 score).

Section III: Assessment of posttest knowledge on midwifery management among trained midwives.

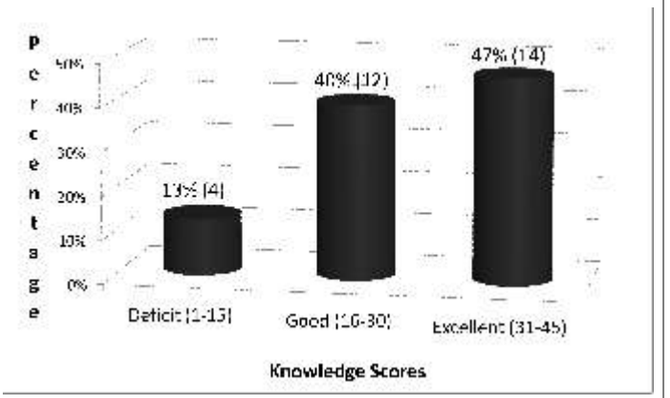

Fig 2 Cylindrical diagram showing Post test knowledge regarding midwifery management

Data presented in Fig 3, depicts that after intervention of MCM Software the post test revealed a good increase in knowledge score, 14(47%) with excellent knowledge score (31-45 score), 12(40%) had good knowledge (16-30 score) and only 4(13%) samples had deficit knowledge score (1-15 score).

Section IV: Association between knowledge on obstetrical/midwifery management and selected demographic variables among trained midwives working in maternity unit.

Table No.1: Association between pre test knowledge scores on obstetrical/midwifery management and selected demographic variables among trained midwives working in maternity unit.

N=30

Selected demographic Variables	Pretest Knowledge Score Deficit (1-15)	Good (16-30)	Excellent (31-45)	df	x2	Table Value
Age in years						
21-25 years	15	6	2			
26-30 years	1	3	3	2	6.87	5.99
>30 years	0	0	0		S *	
Professional Qualification						
GNM	3	3	3			
Post Basic(N)	1	2	0	4	5.57	9.49
B.Sc(N)	12	4	2		NS	
Total years of professional experience						
1-5 years	16	7	2			
6-10 years	0	2	3	2	10.16	5.99
>10 years	0	0	0		S **	
Total clinical experience in maternity unit						
1-5 years	16	8	2			
6-10 years	0	1	3	2	11.92	5.99
>10 years	0	0	0		S **	
Exposure to in-service education						
on midwifery management						
Yes	3	1	0		1.44	5.99
No	12	9	5	2	NS	

The data in table no 1 depicts that the computed chi-square value between the pretest knowledge scores and the socio demographic variables like Professional qualification and exposure to in-service education were not associated with knowledge. The association of Age in years was found statistically significant with chi-square values of 6.87 respectively at $p \leq 0.05$, total years of professional experience and total clinical experience in maternity unit was also found statistically significant with chi square values of 10.16 and 11.92 respectively at $p \leq 0.05$. Therefore the research hypothesis (H_1) was accepted.

Section V: Assessment of Effectiveness of MCM Software by comparing the pretest and posttest knowledge scores among trained midwives.

Table no. 2 Effectiveness of MCM Software by comparing the pretest and posttest knowledge scores among trained midwives (N=30)

Variable	Mean Score	Mean diff.	SD	SE	df	't' Value	Table Value
Pre test	18.96	9.47	4.01	0.73	29	12.97	2.05
Post test	28.43					***S	

***p≤0.05, ** p≤0.01, *** p≤0.001**

NS = Not significant S= Significant

Table no. 2 depicts Mean post knowledge score 28.43 was higher than mean pre test knowledge score 18.43, and computed 't' value 12.97 at df 29 with table value 2.05 was significant at the level $p \leq 0.001$, thus indicating high significant difference and effectiveness of MCM software in increasing the knowledge of trained midwives. Hence H_2 was accepted.

Section VI: Structured opinionnaire to determine the opinion of trained midwives on acceptability of the MCM Software for midwifery management.

The opinion of midwives regarding the MCM Software was calculated, 25(84%) samples believed that MCM is a good source of learning & easy to understand about midwifery case management. 25(84%) of them found that this Software included all important drugs, procedures, calculators and protocols on managing obstetrical conditions. 30(100%) of the samples found the images in MCM Software to be informative and clear. Almost all samples 27(90%) believed that the Software's content was

self explanatory. Most of the samples 24(80%) felt that MCM software saves time for managing obstetrical cases. 25(84%) found that, written instructions of MCM software were helpful whenever they required. 27(90%) of them found that MCM software was user friendly & stimulated interest in nursing care. 24(80%) said that interactive nature of the MCM software made their nursing care more interesting. Almost all of them 29(97%) believed that MCM software is very effective way to apply technology (computer) in nursing practice & education. Most of them 27(90%) participants said that this type of software can be recommended for teaching nursing staffs about case management.

Discussion

Association between Pre Tests Knowledge Score and Selected Socio-Demographic Variables

The present study showed statistically significant association of Age in years with chi-square values of 6.87 respectively at $p \leq 0.05$. The association of Total years of professional experience and total clinical experience in maternity unit also found statistically significant with chi square values of 10.16 and 11.92 respectively at $p \leq 0.05$. Hence H1, there is significant association between the knowledge scores regarding midwifery management and selected socio demographic variables at the level of $p \leq 0.05$ is accepted.

The above findings were supported by the study conducted by Bijapurkar M et al (2009)[5] to assess the effectiveness of self instructional module on the knowledge of Obstetric Drugs among Nurses working in maternity unit. Findings revealed that the total years of experience in maternity unit showed an association with pretest knowledge at 0.05 level of significance. No association was found between the variables, i.e. age, professional qualification, total years of professional experience and in-service education attended at 0.05 level of significance.

Effectiveness of MCM Software on Knowledge regarding Obstetrical/Midwifery Management among Trained Midwives

The mean post knowledge score 28.43 was higher than mean pre test knowledge score 18.43, and computed 't' value ($t_{29} = 12.97$) was also significant at the level of $p \leq 0.001$, thus indicating highly significant difference and effectiveness of MCM software in increasing the knowledge of trained midwives regarding obstetrical management. Thus the hypothesis made by the researcher i.e. H_2 was accepted.

The above finding was supported by the study conducted by **Nadel E(1997)**[6] to assess the effectiveness of obstetric emergency training programme on knowledge regarding obstetric emergencies among medical graduates in Bristol Medical Simulation Centre, England. One hundred and forty samples were selected by non-random method for the study. Data were collected by using questionnaire. The result of the study showed significant difference between pre-test and post-test. Post-test score was (23.1) more while comparing to pre-test score (18.1) and $p < 0.001$.

Conclusion

The result revealed that MCM Software regarding Obstetrical/Midwifery Management among trained midwives was effective and brought about the excellent changes in their level of knowledge. The study concluded that there is deficit knowledge regarding obstetrical management in trained midwives. Today is the age of information technology. People in every field are using this technology in their every day life therefore; the trained midwives working in maternity units can also use this technology with ease. MCM Software was accepted happily by the participants of the present study and their feedback obtained with the help of opinionnaire confirmed this. The participants appreciated this effort and said that they would refer this Software during their day to day practice.

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