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Research Article

Effectiveness of Webinar VS App on Care of Newborn in Terms of Knowledge among Nursing Students

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I N F O

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A B S T R A C T

The first 28 days of life are the most vulnerable time for a new-born's survival. The highest risk of dying is during the first month of life in neonates The study was conducted to assess and compare the Knowledge of nursing students regarding Care of Newborn in Webinar and App group: A true experimental study following pre-test post-test design was conducted in Webinar group (n=49) and 50 in App group (n=50), selected randomly by lottery method. Pre-test (Day 1) and post-test (Day1, Day 15, and Day 30) of knowledge was assessed by using a valid and reliable Structured Knowledge Questionnaire. Statistical analysis was done by using both descriptive and inferential statistics. The mean post-test (Day 1) Knowledge score (19.73) in webinar group and mean post-test (Day 1) Knowledge score (21.48) in App group was significantly higher than pre-test knowledge score (15.76 in Webinar Group and 14.80 in App Group) respectively at 0.05 level significance. Place of living showed association with post-test Knowledge score (Day 1) in App group while place of living and previous knowledge regarding care of Newborn showed association with post-test Knowledge score (Day 15) in Webinar group. The study findings concluded that Webinar and App both were equally effective in enhancing the Knowledge of nursing students.

Keywords: Effectiveness, Webinar, App, Nursing Students, Care of Newborn

Introduction

The first 28 days of life are the most vulnerable time for a new-born's survival. The highest risk of dying is during the first month of life in neonates. Neonatal deaths occur at a global rate of 19 deaths per 1,000 live births. Before reaching at age of 1 year the probability of dying is 12/ 1000 births and after 1 year of age but before turning 5 year is 11/ 1000 births. Globally, in 2016 around 2.6 million neonates died in first month of life. Approximately 7,000 Newborn deaths every day, most of which occurred in the first week, with about 1 million dying on the first day and close to 1 million dying within the next six days. The global mortality rate fell from 37 deaths per 1000 births to 19 in 2016. [1]

The rate of neonatal mortality is not uniform across India. Odisha, Madhya Pradesh, Uttar Pradesh, Rajasthan, and Chhattisgarh have a higher neonatal mortality rate at 30 or more per 1000 live births. Uttar Pradesh, Madhya Pradesh,

Bihar and Rajasthan four states alone has contribute to 56% of total neonatal deaths in India and about 14% of the global neonatal deaths that occur every year. [2]

Around 80% of Neonatal deaths in Haryana occur in the first week of life and out of that 60% of deaths happen within first day of birth. Data suggests that around 20% of Newborn deaths among most of the Newborns occur within 24 hours at home after discharge from hospital. [3]

The major causes of Newborn deaths in India are pre-maturity/ preterm (35%); neonatal infections (33%); intra-partum related complications/ birth asphyxia (20%); and congenital malformations (9%). (Liu et al, 2012) [3]

According to WHO about 5% of babies require resuscitation at birth and many of them may die or suffer from long-term disabilities. 80 percent of babies requiring resuscitation needed only a bag and mask (ambu bag) and room air and oxygen and other complex procedures are not necessary to save most of the newborns. [4]

A nurse's responsibility requires safe and effective care within constantly evolving health care systems. Since skills and knowledge are learned through experience, constant practice and good instructions. The practice should be started as early as possible, especially during the internship of student nurses in the hospital, to know the level of competency of nursing students on immediate Newborn care and to know the level of competency of the student nurses on this procedure may give good insights on how well does the students perform the procedures and may suggest any possible reforms in their learning process. [4]

A study was conducted in 2016 at AIIMS Delhi to evaluate the efficacy of interactive mobile device application 'Apps on sick Newborn care' to improve the knowledge and skill scores of postgraduate nursing students). A workshop was conducted by the facilitators using the modules on android device and preloaded videos in which the procedure was systematically demonstrated. A mixed-methods approach consisting of pre-post-tests, Likert's scale and focus group discussion were used to assess the knowledge, kills and perception of the participants. The scores in multiple choice questions and composite Objective Structured Clinical Examination scores significantly improved after training. The students derived overall satisfaction from the training using the device. Such applications have potential to train health-care professionals.[5]

Due to changing trends and changing attitude towards care of children, the paediatric nurse has to face various challenges. Nurses required to be up to date in the field of specialized care and this can be achieved through various teaching strategies. Thus investigator felt to evaluate the effectiveness of Webinar vs App on Care of Newborn in terms of Knowledge among nursing students in selected college of Ambala, Haryana.

Objectives of the Study

- To assess and compare the Knowledge of nursing students regarding Care of Newborn in Webinar and App group.
- To find out the association of Knowledge of nursing students with sample characteristics.

Material and Method

The research design selected for study was True Experimental (Pre-test Post-test) Design The study was conducted on 99 nursing students studying of B.Sc. Nursing 3rd year and Post Basic B.Sc. Nursing 1st year studying in M.M college of nursing, Mullana, Ambala. Data was collected from 15th October, 2017- 15th November, 2017.

The study included the nursing students who were studying in B.Sc. Nursing 3rd year and Post Basic B.Sc. (N) 1st year and available at the time of data collection. The study excluded the nursing students who were not present in 1st post-test assessment.

Convenience sampling was used to select the sample. Simple random sampling was used to allocate the nursing students in webinar and App group with the help of lottery method. 3 Webinars and 3 modules (from the Facility Based Newborn Care App) were selected for intervention. A structured knowledge questionnaire was used to aseess the knowledge of nursing students regarding care of Newborn through Google form. Informed consent was taken from students for participating in the study.

The reliability coefficient of structured knowledge questionnaire was found to be 0.81.Ethical approval was obtained from the Ethical Committee of MMIMS&R, Mullana, Ambala to conduct the final study.

Data Collection Procedure

On day one, Pre-test of students regarding Knowledge was assessed by Structured Knowledge Questionnaire regarding Care of normal newborn, Thermal protection and Basic resuscitation. Intervention through Webinar and App was given in Webinar and App group respectively. 1st Post-test of students was taken and knowledge was assessed through Structured Knowledge Questionnaire.

On day 15, 2nd Post-test of the students was taken and Knowledge was assessed by Structured Knowledge Questionnaire.

On day 30th, 3rd Post-test of the students was taken and Knowledge was assessed by Structured Knowledge Questionnaire.

Results

The data was analysed and interpreted by using descriptive and inferential statistics according to the objectives of the study. The data and findings have been organized and presented under the following sections:

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Section 1: Description of sample characteristics.

Section 2: Effectiveness of Webinar and App in terms of Knowledge of nursing students regarding care of newborn.

Section 3: Association of Knowledge with selected sample characteristics of nursing students in Webinar and App group.

Table 1.Comparison of the Webinar and App Group in terms of Sample Characteristics of Nursing Students

N=99

S. No.	Selected variables	Group		Chi square	d.f	p-value
		Webinar n=49 f (%)	App n=50 f (%)			
1.	**Age in years**					
1.1	18-20	33 (67.3%)	31 (62%)	22.18	3	0.01 **
1.2	21-23	11 (22.4%)	16 (32%)			
1.3	24-26	04 (8.2%)	03 (6%)			
1.4	27-29	01 (2.0%)	-			
2.	**Gender**					
2.1	Male	13 (26.5%)	05 (10%)	18.07	1	0.31 NS
2.2	Female	36 (73.5%)	45 (90%)			
3.	**Religion**					
3.1	Hindu	36 (73.5%)	27 (54%)	34.72	2	0.18 NS
3.2	Sikh	12 (24.5%)	22 (44%)			
3.3	Christian	01 (2.0%)	-			
3.4	Muslim	-	01 (2%)			
4.	**Course**					
4.1	Post Basic B.Sc. Nursing	12 (24.5%)	06 (12%)	12.80	1	0.01**
4.2	B.Sc. Nursing	37 (75.5%)	44 (88%)			
5.	**Any relative from nursing profession**					
5.1	Yes	02 (4.1%)	14 (28%)	0.47	1	0.49 NS
5.2	No	47 (95.9%)	36 (72%)			
6.	**Place of living during course completion**					
6.1	Hostel	30 (61.2%)	25 (50%)	3.44	2	0.48 NS
6.2	Home	17 (34.7%)	23 (46%)			
6.3	Paying Guest	02 (4.1%)	02 (4%)			
7.	**Previous knowledge regarding care of newborn**					
7.1	Yes	25 (51%)	33 (66%)	2.58	1	0.11 NS
7.2	No	24 (49%)	17 (34%)			
8.	**Previous exposure regarding app based teaching**					
8.1	Yes	-	03 (6%)	-	-	-
8.2	No	49 (100%)	47 (94%)			
9.	**Previous exposure regarding webinar**					
9.1	Yes	-	-	-	-	-
9.2	No	49 (100%)	50 (100%)			
10.	**Any specific training related to newborn care apart from this course**					
10.1	Yes	01 (2%)	03 (6%)	0.07	1	0.79 NS
10.2	No	48 (98%)	47 (94%)			

$\chi 2$ (1, 2, 3) =3.84, 5.99, 7.81

*Significant ($p \leq 0.05$), NS Not Significant ($p > 0.05$), Highly Significant ($p = 0.01$) - **

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The computed chi-square value for the selected demographic variables in the webinar and app group of nursing students for age (0.01) and course (0.01) were found to be significant at 0.05 level of significance. Hence, it can be inferred from the findings that compare nursing students in both groups were not homogenous with regard to age and course (Table 1).

The mean post-test-test knowledge score (19.73) was found to be significantly higher than the mean pre-test score (15.76) with t value (4.65) significant at 0.05 level of significance suggesting the effectiveness of Webinar in increasing the Knowledge of nursing students regarding Care of Newborn.

The mean post-test-test knowledge score (21.48) was found to be significantly higher than the mean pre-test score (14.80) with t-value (7.68) significant at 0.05 level of significance suggesting the effectiveness of App in increasing the Knowledge of nursing students regarding Care of Newborn (Table 2).

The obtained t-value in Webinar group was found to be significant at 0.05 level in area of Care of Normal Newborn and Basic resuscitation. This indicates that the mean post-test knowledge score was significantly higher than mean pre-test score in area of Care of Normal Newborn and Basic resuscitation in Webinar group.

The obtained t-value in App group was found to be significant at 0.05 level in area of Care of Normal Newborn, Thermal protection and Basic resuscitation. This indicates that the mean post-test knowledge score was significantly higher than mean pre-test score in area of Care of Normal Newborn, Thermal protection and Basic resuscitation in App group (Table 3).

This indicated that the nursing students in Webinar and App group were not significantly different in terms of pre-test and post test knowledge score (Table 4).

The mean pre and post-test Knowledge score of nursing students in Webinar and App group was not significantly different in area of Care of Normal Newborn and Basic resuscitation.

The difference in mean pre and post-test Knowledge score in area of Thermal was the true difference and not by chance, suggesting that mean post-test Knowledge score of nursing students in App group was significantly higher than the mean post-test knowledge score of Webinar group in area of Thermal protection (Table 5).

Table 2.Mean Pre-Test and Post-test (Day 1) Knowledge Score of Nursing Students in Webinar and App Group

N=99

Group	Mean	M_D	SD_D	SE_{MD}	t-value	df	p-value
Webinar (n=49)							
Pre-test	15.76	3.97	5.98	0.85	4.65	48	0.01**
Post-test	19.73						
App (n=50)							
Pre-test	14.80	6.68	6.14	0.86	7.68	49	0.01**
Post-test	21.48						

t (48,49)=2.01

*Significant (p≤0.05), NSNot Significant (p>0.05), Highly Significant (p=0.01) - **

Table 3.Area Wise comparison of Pre-Test and Post-Test (Day 1) of Knowledge Score of Nursing Students in Webinar and App Group

N=99

Areas	Pre-test mean	Post-test mean	M_D	SDD	SE_{MD}	't' value	p-value
Webinar group (n=49)							
Care of normal newborn	4.82	6.37	1.55	2.06	0.30	5.27	0.01**
Thermal protection	6.35	7.31	0.96	3.43	0.50	1.96	0.56NS
Basic resuscitation	4.59	7.31	2.72	3.06	0.437	6.21	0.01**
App group (n=50)							
Care of normal newborn	5.16	6.72	1.56	2.17	0.31	5.09	0.01*
Thermal protection	5.32	8.74	3.42	3.22	0.46	7.51	0.01*
Basic resuscitation	4.32	7.02	2.70	6.06	0.86	3.15	0.01*

*Significant (p≤0.05), NSNot Significant (p>0.05), Highly Significant (p=0.01) - **

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Table 4.Pre-test and Post-test (Day 1) knowledge score of Nursing Students between Webinar and App group

N=99

GROUP	Mean	M_D	SE_{MD}	't' value	df	p-value
Pre-test						
Webinar group (n=49)	15.76	0.74	1.19	1.28	97	0.20^{NS}
App Group (n=50)	14.80					
Post-test						
Webinar group (n=49)	19.73	1.75	0.97	1.79	97	0.76^{NS}
App Group (n=50)	21.48					

t (97)= 1.98

*Significant (p≤0.05), ^{NS} Not Significant

Table 5.Area Wise comparision of Pre-test and Post-test(Day 1) of knowledge score of Nursing Students in Webinar and App group

N=99

Areas	Group		M_D	SE_{MD}	't' value	p-value
	Webinar (n=49)	App (n=50)				
Pre-test						
Care of normal newborn	4.82	5.16	0.34	0.28	1.22	0.22 ^{NS}
Thermal protection	6.35	5.32	1.02	0.47	2.17	0.03*
Basic resuscitation	4.59	4.32	0.27	0.34	0.78	0.43 ^{NS}
Post-test						
Care of normal newborn	6.37	6.72	0.35	0.29	1.19	0.23 ^{NS}
Thermal protection	7.31	8.74	1.43	0.48	2.97	0.01**
Basic resuscitation	6.06	7.02	0.95	0.82	1.16	0.24 ^{NS}

*Significant (p≤0.05), ^{NS}Not Significant (P>0.05), Highly Significant (p=0.01) - **

Table 6.Post-test Knowledge score (Day 1, Day 15 and Day30) of Nursing Students in Webinar and App group on 1st day, 15th day and 30th day

N=99

Area	Post test	Mean ±S.D	f-value	df	p-value
Webinar (n=49)					
Knowledge	Day 1	19.73±4.95	2.44	2/47	0.99^{NS}
	Day 15	18.14±5.46			
	Day 30	20.10±5.52			
App (n=50)					
Knowledge	Day 1	21.48±4.73			
	Day 15	19.86±5.14	2.72	2/48	0.11^{NS}
	Day 30	19.42±4.39			

f (2/47)=3.20, f (2/48)=3.19

*Significant (P≤0.05), ^{NS} Non significant (p>0.05)

There is no significant difference between post-test knowledge score (Day 1, Day 15 and Day 30) in Webinar and App group. This indicated that the nursing students in Webinar and App group were not significantly different in terms of post-test knowledge score (Table 6).

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Table 7.Association of Post-test Knowledge Score of Nursing Students with Selected Sample Characteristics in Webinar and App Group

N=99

S. No.	Sample Characteristics	Webinar (n=49)						App (n=50)					
		1st post test		2nd post test		3rd post test		1st post test		2nd post test		3rd post test	
		f/t value	p-value	f/t value	p-value	f/t value	p-value	f/t value	p-value	f/t value	p-value	f/t value	p-value
1.	Age in years	1.55	0.21^{NS}	1.09	0.36^{NS}	0.33	0.80^{NS}	1.30	0.28^{NS}	0.78	0.46^{NS}	1.03	0.36^{NS}
2.	Gender	0.53	0.47^{NS}	1.12	0.26^{NS}	1.44	0.15^{NS}	0.18	0.67^{NS}	0.06	0.95^{NS}	2.12	0.39^{NS}
3.	Religion	0.00	0.99^{NS}	0.00	0.99^{NS}	0.24	0.78^{NS}	1.24	0.30^{NS}	1.24	0.30^{NS}	0.18	0.83^{NS}
4.	Course	0.39	0.53^{NS}	1.02	0.32^{NS}	0.94	0.34^{NS}	0.61	0.44^{NS}	0.32	0.74^{NS}	0.44	0.66^{NS}
5.	Any relative from nursing profession	1.07	0.31^{NS}	1.65	0.10^{NS}	1.34	0.18^{NS}	0.52	0.47^{NS}	1.29	0.45^{NS}	0.72	0.47^{NS}
6.	Place of living during course completion	0.77	0.47^{NS}	4.45	0.02*	0.36	0.69^{NS}	4.71	0.01*	0.44	0.95^{NS}	0.60	0.55^{NS}
7.	Previous knowledge regarding newborn care	0.00	0.92^{NS}	2.63	0.01*	1.94	0.06^{NS}	0.11	0.74^{NS}	0.36	0.71^{NS}	1.52	0.13^{NS}
8.	Previous exposure regarding app based teaching	-	-	-	-	-	-	0.96	0.33^{NS}	0.41	0.68^{NS}	0.91	0.36^{NS}
9.	Any specific training related to newborn care apart from this course:	-	-	1.67	0.10^{NS}	0.34^{NS}	0.73^{NS}	0.22	0.64^{NS}	0.48	0.96^{NS}	1.19	0.23^{NS}

*Significant (p=0.05), ^{NS} Non Significant (p>0.05), **Highly Significant (p=0.01)

Post-test (Day 1): In App group, place of living have association with post-test Knowledge score.

Post-test (Day 15): In Webinar group, place of living , previous knowledge regarding care of Newborn have association with post-test Knowledge score.

Discussion

The present study findings showed that the mean post-test knowledge score on Day 1 (19.73) was significantly higher than the mean pre-test score (15.76) in Webinar group. The mean post-test knowledge score (21.48) was significantly higher than the mean pre-test score (14.80) in App group. The findings of the present study revealed that Webinar and App were effective in enhancing the knowledge of nursing students which was consistent with the findings of study by Anu Thukral, to evaluate the efficacy of interactive mobile device application 'Apps on sick Newborn care' to improve the knowledge and skill scores of postgraduate nursing students. The scores in multiple choice questions (pre and post, 12.4±2.2 and 19.7±3.6 and composite Objective Structured Clinical Examination scores (32.8±7.3 vs. 63.7±7.1) significantly improved after training. The students derived overall satisfaction from the training using the device. Such applications have potential to train health-care professionals.[5]

The present study findings showed that the mean post-test Knowledge score was significantly higher than the mean pre-test score in area of Care of Normal Newborn and Basic resuscitation and found to be not significantly higher in area of Thermal Protection in Webinar group. The findings of study were contradictory with the findings of study Abdel Rasoul GM to assess the effect of designed guidelines

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on nurses' performance to prevent preterm infants' hypothermia in which total knowledge and performance were higher on post and follow up tests than pre-test.[6]

The present study findings showed that the mean post-test knowledge score were not significantly different in area of Care of Normal Baby and Basic resuscitation in Webinar and App group and was significantly higher in area of Thermal Protection in App group. The reason can be the availability of videos, posters and practice questions in App and 24 hour access to App. The findings of study was consistent with the findings of study by Amita Sood to evaluate the knowledge of nursing personnel regarding concept of thermal protection of neonates before and after administration of video teaching . The mean post-test knowledge score of nursing personnel were higher than the mean pre-test knowledge score.[7]

The limitations of the study was that study was confined to small number of nursing students (99 students) of Maharishi Markandeshwar University, Mullana, Ambala, and Haryana. The sample for webinar and app group was taken from the same population. One time Knowledge was applied 4 times on the same population.

On the basis of the study, it is recommended that this study can be replicated on a large scale to investigate whether the significant findings can be sustained among a larger group. An experimental study can be conducted to assess the Knowledge of nursing students by comparing Webinar with traditional method of teaching. An experimental study can be conducted to assess the Decision Making Ability of nursing students by comparing App with traditional method of teaching. Also a similar study can be conducted on nursing students by administration of Webinar and App and evaluating by post-test until the competency level has not reached**.**

Conclusion

The conclusions drawn from the findings of the study is that Webinar and App both were equally effective in enhancing the of nursing students.

Conflict of Interest: None

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