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Effectiveness of Integrated Pathway (IP) regarding care of people affected with Ebola virus disease

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ABSTRACT

Introduction: Health care workers are at a greater risk of contact with infectious diseases such as Ebola virus disease the worst hit in 2014 and may promote transmission by occupational exposures. Objectives: To evaluate the effectiveness of Integrated Pathway on knowledge and attitude of nurses regarding care of people affected with EVD. Methodology: Quasi Experimental research approach, Time Series Design Non Equivalent Control Group Design was adopted. In the experimental and control group, each comprising 16 study participants, totally 32 from two different tertiary care hospitals, at Coimbatore. Knowledge and attitude questionnaire were used and analyzed by using descriptive statistics. Results: There was the highest significant difference between pretest and posttest 3 score of knowledge of nurses in care of people affected with EVD ($t = 21.2354$; $p < 0.05$), whereas the lowest level of significant difference was found between posttest 1 and posttest 3 score of knowledge of nurses in care of people affected with EVD ($t = 3.4802$; $p < 0.05$). Also in control group, it depicted that there was significant difference found between pretest and posttest 1 score of knowledge of nurses in care of people affected with EVD ($t = 1.7111$; $p < 0.05$), whereas the lowest level of significant difference was noted between posttest 2 and posttest 3 score of knowledge of nurses in care of people affected with EVD ($t = 0.2559$; $p < 0.05$). Conclusion: The study had proved the necessity to create a great impact on the level of knowledge and attitude of nurses.

Keywords— *Effectiveness, Integrated Pathway (IP), Ebola Virus Disease (EVD), Knowledge and attitude of nurses*

1. INTRODUCTION

All healthcare workers face a wide range of hazards on the job, including blood and body fluid exposure as well as musculoskeletal injuries related to ergonomic hazards from lifting and repetitive tasks; nursing personnel often experience these hazards most frequently (CDC, 2000). Work-acquired infectious diseases are among the risks all healthcare workers face; and blood-borne pathogens figure prominently among these. Occupational exposure to blood and body fluids is well documented among healthcare workers (Bureau of Labor Statistics; 1999). Emerging infectious diseases and outbreaks of recognized contagious illnesses have highlighted other concerns about the safety of healthcare workers. The Ebola virus is the major epidemic disease occurring in Africa; it is very serious health problem today the world is facing, as it caused major deaths within a short period of time. As the member of health team, the staff nurses should have adequate knowledge about the disease and its prevention, to handle the situation. It will also help to remove the misconception about the disease and to use appropriate preventive measures. Creating awareness about the disease is the prime responsibility of health care workers. The scope of that outbreak, both in terms of cases and geography, can be attributed to the unprecedented circulation of EVD into crowded urban areas, increased mobilization across borders, and conflicts between key infection control practices and prevailing cultural and traditional practices in West Africa. Engaging local leaders in prevention programs and messaging, along with careful policy implementation at the national and global level, helped to eventually contain the spread of the virus and put an end to this outbreak. Barring unprecedented growth in the nursing workforce or unforeseen new forces in health care that intervene to reduce burden of care in society, the numbers of nurses will not keep pace with the demand for services. In the coming decades, we face the prospect of fewer professionals and more unlicensed workers in the healthcare workforce. Decisions will have to be made about how hospitals will safely adapt to this situation. At this time, little evidence exists on what constitutes a safe and efficient labor force mix. Therefore, the general impact of nurse working conditions needs to be examined. First, longitudinal studies that track change in infection rates and other untoward incidents over time, under different working conditions, and with different staffing models are essential. Second, researchers need to study how the actual care received by patients varies under different staffing conditions at the bedside so that a better understanding of the impact of work environments at the point of care can be

gained. Finally, since costs of care increase when patients have adverse outcomes and nurses' working conditions affect outcomes, better working conditions could arguably save the healthcare system money. However, the cost-benefit ratio is not known and economic analyses, which include costs related to training, recruitment, and retention, need to be conducted (Zhan C, Miller MR, 2003). An Integrated Pathway (IP) comprised detailed note on care of people affected with Ebola virus disease and the nurse's role from admission to discharge and death care. Community engagement is the key to successfully controlling outbreaks. Good outbreak control relies on applying a package of interventions, namely case management, surveillance and contact tracing, a good laboratory service, safe burials and social mobilization. Early supportive care with rehydration, symptomatic treatment improves survival. There is as yet no licensed treatment proven to neutralize the virus but a range of blood, immunological and drug therapies are under development. Hence, the investigator had taken initiatives to strengthen the cognitive, affective and psychomotor domains of nurses towards the disaster preparedness and mortality reduction.

2. STAEMENT OF THE PROBLEM

A Comparative Study to Assess the Effectiveness of Integrated Pathway (IP) on
Knowledge and Attitude of Nurses regarding Care of People Affected with Ebola Virus Disease at selected setting.

3. OBJECTIVES

- To assess the knowledge, attitude of nurses regarding care of people affected with Ebola virus disease before implementing IP.
- To evaluate the effectiveness of IP on the knowledge and attitude of nurses in care of people affected with Ebola virus disease among the experimental group of nurses.

4. OPERATIONAL DEFINITIONS

- **Effectiveness:** referred to the extent to which the desirable changes are produced or measured upon the knowledge and attitude of nurses in caring of people affected with Ebola Virus Disease.
- **Integrated Pathway (IP)**: referred to the Teaching / communication methodology using electronic media and care pathway module to improve knowledge and attitude of nurses in caring of people affected with Ebola Virus disease.
- **Knowledge:** included knowledge of nurses in history, causative organisms, mode of transmission, epidemiology, diagnosis, signs and symptoms, prevention and control of infection, management and bundles of care of people affected with Ebola Virus
- Disease as measured by structured knowledge questionnaire.
- **Attitude**: included attitude of nurse in infectivity, risks and rights of nurses, care patients, prevention, awareness and empowering nurses as measured by attitude scale.
- **Nurses:** The nurses were the one who are professionally qualified in Nursing from the recognized institutions and working in the hospital as registered nurses.

5. NULL HYPOTHESES

H_{01}: There will be no significant difference in the knowledge and attitude of nurses in care of people affected with Ebola virus disease before and after implementation of IP.

6. MATERIALS AND METHODS

Quasi Experimental research approach, Time Series Design Non Equivalent Control Group Design was adopted. The study was conducted in two different tertiary care hospitals, at Coimbatore, after obtaining Institutional Ethical Committee at PSG IMSR. Both the experimental and control group comprised 16 study participants each, totally 32. The nurses who were willing and present during the study were included. The knowledge questionnaire comprised 40 multiple choice questions on causative agent, mode of transmission, and history of epidemic outbreak, signs and symptoms, diagnosis, prevention and control of infection, management and nursing care of people affected with Ebola Virus Disease. Attitude scale included the statements related to infectivity, risks and rights of nurses, prevention and awareness, empowering nurses and care of patients affected with Ebola virus disease. Descriptive and inferential statistics were used to analyze the data. Score for interpretation of knowledge include, adequate knowledge (31 to 40), moderately adequate knowledge (21 to 30) and inadequate knowledge (≤20). Score for interpretation of attitude include, positive attitude (46 to 60), neutral attitude (31 to 45) and negative attitude (≤ 30).

7. RESULTS

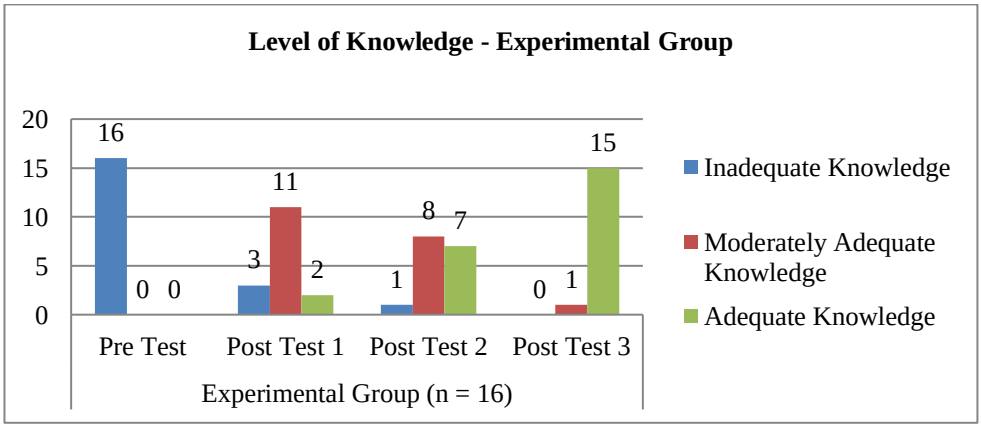

Fig. 1: Pretest and Posttest 1, 2 and 3 knowledge of nurses in care of people affected with Ebola Virus Disease among Experimental Group

The above figure 1 explained that among the study participants from experimental group, all of them (100 %) had only inadequate knowledge in the pre test. But steadily they had acquired knowledge. Majority of them (94%) had adequate knowledge in the post test 3. This depicted the significance of the implementation of integrated pathway. Also there was a regular reinforcement with teaching and repeated observation.

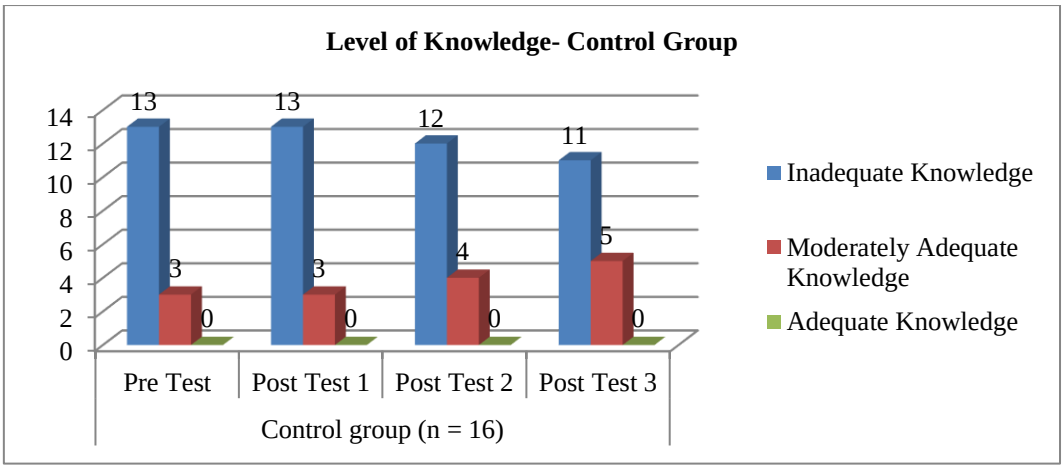

Fig. 2: Pretest and Posttest 1, 2 and 3 knowledge of nurses in care of people affected with Ebola Virus Disease among Control Group

The above figure 1.a. and 1.b. explained that among the study participants from control group, 13 of them (81%) had inadequate knowledge in the pre test and post test 1 but not the same study participants. During the 2nd post test, 12 nurses (75%) and during the 3rd post test, 11 nurses (69%) had inadequate knowledge. None of them had adequate knowledge in all the four observations, about care of people affected with Ebola Virus disease.

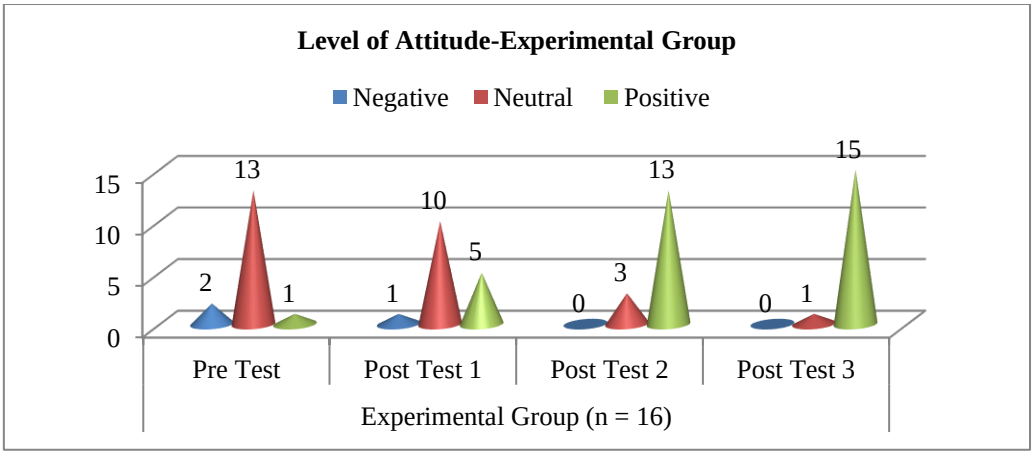

Fig. 3: Pretest and Posttest 1, 2 and 3 attitude of nurses in care of people affected with Ebola Virus Disease among Experimental Group

Figure 3 details regarding the attitude of nurses from experimental group, 13 nurses (81%) had moderately favorable attitude. After the exposure to integrated pathway, their outlook in caring people affected with Ebola Virus Disease had improved. From 5 nurses (31%) in post test 1 to 13 nurses (81%) in post test 2 had favorable attitude scores, which is evident for the passion that our nurses have towards caring patients with epidemic diseases. Finally, 15 of them (94%) had favorable attitude in caring people affected with Ebola Virus diseases.

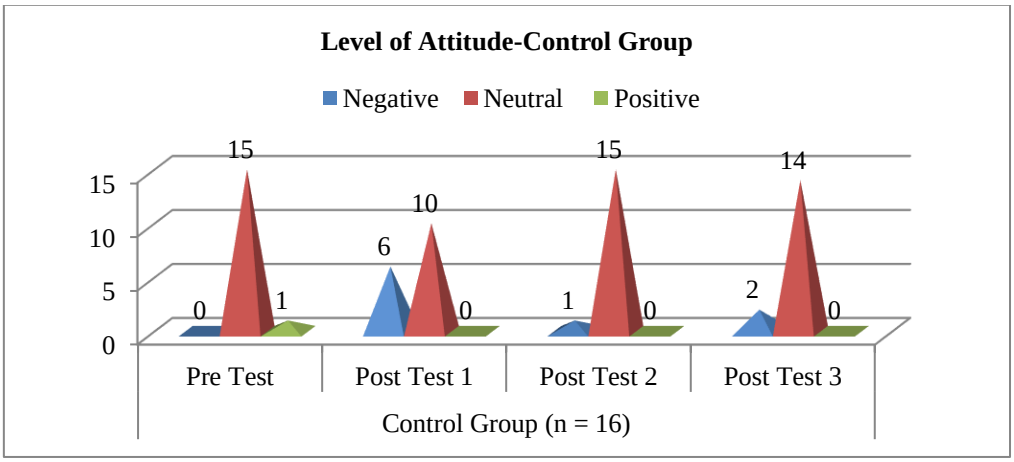

Fig. 4: Pretest and Posttest 1, 2 and 3 attitude of nurses in care of people affected with Ebola Virus Disease among Control Group

Figure 4 explains that in control group, 15 nurses (94%) had moderately favorable attitude in pretest. In the post test 3, there were 14 nurses (88%) had moderately favorable attitude and 2 nurses (12%) had unfavorable scores. There was no defined pattern in the scores of favorable, moderately favorable and unfavorable attitude scores.

Table 1: Post hoc analysis of level of knowledge of nurses in care of people affected with Ebola Virus Disease

Level of Knowledge	Experimental group (n=16)				Control group (n=16)			
	Mean ± SD	"t" value	95 % C I	P value	Mean ± SD	"t" value	95 % C I	P value
Pre Test	10.50 ± 1.79	8.2275	-10.86 to -6.39	0.0001	12.94 ± 3.66	1.7111**	-0.28 to 2.53	0.1077
Post Test 1	19.13 ± 4.26				11.81 ± 3.47			
Pre Test	10.50 ± 1.79	11.1351	-14.67 to -9.96	0.0001	12.94 ± 3.66	0.5269	-1.90 to 3.15	0.6060
Post Test 2	22.81 ± 4.26				12.31 ± 4.17			
Pre Test	10.50 ± 1.79	21.2354 **	-18.50 to -15.12	0.0001	12.94 ± 3.66	0.3280	-2.06 to 2.81	0.7475
Post Test 3	27.31 ± 2.63				12.56 ± 3.83			
Post Test 1	19.13 ± 4.26	3.4802*	-5.95 to -1.43	0.0034	11.81 ± 3.47	0.4472	-2.88 to 1.88	0.6611
Post Test 2	22.81 ± 4.26				12.31 ± 4.17			
Post Test 1	19.13 ± 4.26	8.0151	-10.36 to -6.01	0.0001	11.81 ± 3.47	0.6274	-3.30 to 1.80	0.5399
Post Test 3	27.31 ± 2.63				12.56 ± 3.83			
Post Test 2	22.81 ± 4.26	5.514	-6.24 to -2.79	0.0001	12.31 ± 4.17	0.2559 *	-2.33 to 1.83	0.8015
Post Test 3	27.31 ± 2.63				12.56 ± 3.83			

Table 1 reveals that there was a highest significant difference between pre test and post test 3 score of knowledge of nurses in caring of people affected with Ebola Virus Disease ($t = 21.2354$; $p < 0.05$), whereas the lowest level of significant difference is found between posttest 1 and posttest 3 score of knowledge of nurses in caring of people affected with Ebola Virus Disease ($t = 3.4802$; $p < 0.05$). 2.131 (two tailed). Also in case of control group, it depicted that there was significant difference found between pretest and posttest 1 score of knowledge of nurses in caring of people affected with Ebola Virus Disease ($t = 1.7111$; $p < 0.05$), whereas the lowest level of significant difference is found between posttest 2 and posttest 3 score of intellectual capacity of nurses in caring of people affected with Ebola Virus Disease ($t = 0.2559$; $p < 0.05$).

Table 2: Post hoc analysis of level of attitude of nurses in care of people affected with Ebola Virus Disease

Level of Attitude	Experimental group (n=16)				Control group (n=16)			
	Mean ± SD	"t" value	95 % C I	P value	Mean ± SD	"t" value	95 % C I	P value
Pre Test	37.50 ± 7.28	5.6942	-7.82 to -3.56	0.0001	41.13 ± 2.89	3.9485	3.14 to 10.49	0.0013
Post Test 1	43.19 ± 5.95				34.31 ± 5.87			
Pre Test	37.50 ± 7.28	7.7249	-12.36 to -7.01	0.0001	41.13 ± 2.89	3.8176	2.37 to 8.38	0.0017
Post Test 2	47.19 ± 4.92				35.75 ±4.81			
Pre Test	37.50 ± 7.28	9.0068**	-17.08 to -10.54	0.0001	41.13 ± 2.89	5.1885**	3.87 to 9.26	0.0001
Post Test 3	51.31 ± 3.68				34.56 ± 3.56			
Post Test 1	43.19 ± 5.95	6.0764	-5.40 to -2.60	0.0001	34.31 ± 5.87	0.8503	-5.04 to 2.17	0.4085
Post Test 2	47.19 ± 4.92				35.75 ±4.81			
Post Test 1	43.19 ± 5.95	7.4989	-10.43 to -5.82	0.0001	34.31 ± 5.87	0.1411*	-4.03 to 3.53	0.8896
Post Test 3	51.31 ± 3.68				34.56 ± 3.56			
Post Test 2	47.19 ± 4.92	4.2914*	- 6.17 to -2.08	0.0006	35.75 ±4.81	0.8240	-1.88 to 4.26	0.4228
Post Test 3	51.31 ± 3.68				34.56 ± 3.56			

Table 2 depicts that among the experimental group, there was significant difference found between pretest and posttest 3 score of knowledge of nurses in caring of people affected with Ebola Virus Disease ($t = 9.0068$; $p < 0.05$), whereas the lowest level of significant difference is found between posttest 2 and posttest 3 score of knowledge of nurses in caring of people affected with Ebola Virus Disease ($t = 4.2914$; $p < 0.05$). But in the control group, there was significant difference found between pretest and posttest 3 score of knowledge of nurses in caring of people affected with Ebola Virus Disease ($t = 5.1885$; $p < 0.05$), whereas the lowest level of significant difference is found between posttest 1 and posttest 3 score of knowledge of nurses in caring of people affected with Ebola Virus Disease ($t = 0.8240$; $p < 0.05$).

8. DISCUSSION

Effectiveness of Integrated Pathway (IP) on Knowledge and Attitude of Nurses regarding Ebola Virus Disease

Thirty two nurses were selected as 16 in Experimental and Control group in 2 different settings. Their knowledge and attitude were assessed as pretest on Ebola Virus Disease. Integrated Pathway (IP) was administered using lecture cum discussion and power point presentation for only the experimental group on the day 1. Post test 1 was conducted for both the experimental and control group. On the same day, a module was distributed on Ebola virus (X_2) for only the experimental group at the end of 1st week. Post test 2 was conducted for both the experimental and control group at the end of 2nd week. Post test 3 was conducted for both the experimental and control group at the end of 3rd week. The pre test score O_1 was used as a baseline to compare the post test scores, that is O_2, O_3, O_4. In the analysis of data, the difference between the pre test and the post test scores represented the effect of independent variable.

On evaluation, Posttest 1, 2, and 3 scores of Experimental group showed a steady increase in knowledge gain than pre test scores. Among the experimental group, in Post test 1, eleven (69%) had moderately adequate knowledge, in Post test 2, seven (44%) had adequate knowledge and in Post test 3, fifteen (94%) had adequate knowledge in the level of knowledge on Ebola Virus Disease after the implementation of Integrated Pathway. Among the Control group, in Pre test and in Post test1, thirteen (81%) had inadequate knowledge, in Post test 2, twelve (75%) had inadequate knowledge and in Post test 3, eleven (69%) had inadequate knowledge in the level of knowledge on Ebola Virus Disease. In all the observation among control group none of them had adequate knowledge on Ebola Virus Disease.

There was a highest significant difference between pre test and post test 3 score of knowledge of nurses in care of people affected with Ebola Virus Disease ($t = 21.2354$; $p < 0.05$), whereas the lowest level of significant difference is found between posttest 1 and posttest 3 score of knowledge of nurses in care of people affected with Ebola Virus Disease ($t = 3.4802$; $p < 0.05$). 2.131 (two tailed). Also in case of control group, it depicts that there was significant difference found between pretest and posttest 1 score of knowledge of nurses in care of people affected with Ebola Virus Disease ($t = 1.7111$; $p < 0.05$), whereas the lowest level of significant difference is found between posttest 2 and posttest 3 score of knowledge of nurses in care of people affected with Ebola Virus Disease ($t = 0.2559$; $p < 0.05$).

Among the experimental group, there was significant difference found between pretest and posttest 3 score of intellectual capacity of nurses in caring of people affected with Ebola Virus Disease ($t = 9.0068$; $p < 0.05$), whereas the lowest level of significant difference is found between posttest 2 and posttest 3 score of knowledge of nurses in caring of people affected with Ebola Virus Disease ($t = 4.2914$; $p < 0.05$). But in the comparison group, there was significant difference found between pretest and posttest 3 score of knowledge of nurses in caring of people affected with Ebola Virus Disease ($t = 5.1885$; $p < 0.05$), whereas the lowest level of significant difference is found between posttest 1 and posttest 3 score of knowledge of nurses in caring of people affected with Ebola Virus Disease ($t = 0.8240$; $p < 0.05$).

Balami (2016), had conducted a cross-sectional study was conducted involving 423 under-graduate medical and nursing students from University of Maiduguri Teaching Hospital using multi-stage stratified random sampling. Mean knowledge score was 30.4 ± 6.4, only 40.9% had good knowledge. Predictors of knowledge were Age (AOR=1.164, 95% CI=1.07-1.26), Field of study (AOR=4.64, 95% CI=2.33-9.23) and Year of studies (AOR=2.27, 95% CI = 1.06-4.84). The study was concluded that there was still poor knowledge regarding this disease and the need for improvements.

9. CONCLUSION

The study was conducted to assess effectiveness of Integrated Pathway (IP) upon knowledge and attitude of Nurses in care of People affected with Ebola Virus Disease. The study had proved to create a great impact on the level of knowledge and attitude of nurses. The World Health Organization (WHO) believes it is now time to acknowledge that communication expertise has become as essential to outbreak control as epidemiological training and laboratory analysis. WHO has advocated successfully for the protection of health workers in all settings, health worker infection investigations, provision of dedicated treatment facilities for infected health workers and has played the lead role in coordinating medical evacuations where necessary. Nursing is the huge force and is recognized that nursing staff may be anxious or want to access more information, particularly to work with patients affected with Ebola virus. Nurse educators must be encouraging nurses to take this opportunity review their preparedness.

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