Original Research Article

Impact of Instructional module on knowledge And practice related to use of personal protective Equipment for prevention of Covid-19 infection among Student of selected nursing college of Kashmir

ABSTRACT

Background: Covid19 has affected people all over the world especially health care workers who are constantly exposed to this virus while providing services to their clients. Health care workers act as carriers for the transmission of pathogens between patients & other health team members. This can be prevented by adopting proper infection control measures & techniques while rendering services. It can only be achieved when there is an up-gradation of knowledge & practice in health care workers especially nurses and nursing students as they are the only members of the health team who work round the clock with patients. They need to be up to date regarding infection prevention measures like the use of personal protective equipment's. This study was aimed to assess the impact of an Instructional Module on knowledge & practice related to the use of personal protective equipment's for the prevention of Covid19 infection among nursing students.

Methods: A pre-experimental one group pre-test post-test design was adopted for the study. 60 B.Sc. Nursing students from SMMCNMT, IUST, Awantipora, Kashmir and Institute of Nursing, South Campus, University of Kashmir were selected by Convenient Sampling technique. A standardized questionnaire and observational checklist was used to collect the data. Descriptive & Inferential statistics was used to analyze the data.

Results: Study reveals that all the study subjects (60) belong to the age group (18-20). Majority 35(58.3%) subjects were females and 25(41.7%) subjects are males. 39(65%) of subjects were from rural area and 21(35%) subjects were from urban area. 20(33.3%) of study subjects were selected from B.Sc. Nursing first year, 20(33.3%) of study subjects were from BSc nursing 2nd year and 20 (33.3%) were from 3rd year. Sources of information to study subjects regarding personal protective equipment's include teachers (48.3%), family (16%), health personnel (10%) and electronic media (8.3%). Pre-test knowledge score revealed that 6.7% of the subjects had

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inadequate knowledge, 93.3% subjects had moderate knowledge while only 0% subjects had adequate knowledge regarding use of PPE's. Pretest practice score revealed that 8.3% of subjects had poor practice, 78.3% of subjects had average practice and 13.3% of subjects had good practice regarding the use of PPE's. Post-test knowledge score revealed that 0% subjects had inadequate knowledge, 13.3% subjects had moderate knowledge and 86.7% subjects had adequate knowledge regarding the use of PPE's. Post-test practice score revealed that 0% subjects had poor practice, 15% subjects had average practice and 85% subjects had good practice regarding the use of PPE's. This indicates that the mean post-test knowledge scores i.e. 23.47(78.20%) is higher than the mean pretest knowledge scores i.e. 13.72(45.7%). The obtained value of t is 45.402 at $p<0.05$ level of significance. The mean posttest practice scores i.e. 9.93(82.80) is higher than the mean pretest practice scores i.e. 6.88(57.40%). The obtained value of t is 27.722 at $p<0.01$ level of significance.

Conclusion: The results revealed that Instructional Module was highly effective as there was significant increase in the post-test knowledge and practice scores among the B.Sc. Nursing students of SMMCNMT, IUST Awantipora, Kashmir and Institute of Nursing, South Campus, University of Kashmir.

Keywords: Impact, Self Instructional Module, Personal Protective Equipment's

Introduction:

Covid-19 is a severe respiratory syndrome that is caused by Coronavirus 2 (SARS-COV-2). It was first recognized in Wuhan, China in Dec. 2019 & was declared a pandemic by WHO on 11th March 2020(1). Since the inception of this pandemic globally, more than 17,000 health care workers have lost their lives due to Covid-19 and its associated complications (2)(3). To disintegrate the spread of the virus, international recommendations principally focused on the appropriate use of personal protective equipment (PPEs)(4)(5).

Firstly transmission of Covid-19 to health care workers likely occurred in Solano County, California in February 2020. At that moment, PPE precautions were not yet settled, so none of the health care workers wore PPE for Covid 19 protection. As a consequence of that, 121 health care workers were having a high, medium, or low risk of infection (6). So it is clear that health care workers are at the highest risk of exposure to Covid-19 while dealing with patients affected

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by Covid-19 in all the health care settings (7). The way they have to care for their patients involves close contact with blood and body fluids. So, they need appropriate protection to protect themselves from such hazards and this protection is provided only by Personal Protective Equipments (8). World Health Organization defines Personal Protective Equipments as those equipment's that prevent and minimize the exposure of various biological, chemical radiological, electrical, and mechanical hazards. Personal Protective Equipments protect health care workers from pathogens and hospital-acquired infections (HAI) at health care settings (9).

By caring for Covid-19 patients, health care workers act as frontline warriors in this pandemic. They are involved in the collection of Covid samples, carrying invasive and non-invasive procedures, dealing closely with Covid positive patients, and are at high risk of getting Covid-19 infection. Many protocols and guidelines for the prevention of Covid 19 infection are put forward by various international organizations and regulatory bodies like the Centre for Disease Control and Prevention (CDC), World Health Organization (WHO), European Agency for Safety and Health, Ministry of Health and Family Welfare (MoHFW) like Hand washing, use of alcohol-based sanitizers, maintenance of social distance and use of Personal protective equipment's. The use of Personal protective equipment's is one of the most essential elements for the prevention and control of Covid-19 infection (10).

PPE helps to secure that health care workers are safe from various hazards that they encounter in their working environment. PPE prevents health care workers from different environmental threats but no equipment is appropriate for all individuals, risks and threats: preferably, equipment must be selected and properly used according to setting and the level of threat or risk. It involves a selection of appropriate personal protective equipment according to the threat, proper sequence of donning and doffing, and proper disposal (11).

To overcome staff shortage in hospitals, on May 2021 central Government decided to rope in final year medical and nursing students for Covid-19 duty. Here arises the need of training programs for donning and doffing of Personal protective equipment’s to protect these students from opportunistic infections(12).

Material & Methods:

Quantitative pre-experimental one group pre-test post-test research design was used in this study. 60 B.Sc. nursing students were selected by Stratified random sampling technique from Syed

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Mantaqi Memorial college of Nursing & Medical Technology, IUST Awantipora and Institute of Nursing South Campus, University of Kashmir. A standardized questionnaire & observation checklist was used to collect data regarding use of personal protective equipment's for the prevention of Covid19 infection.

Categorization of knowledge score

Knowledge	Score
Good	21-30
Average	11-20
Poor	0-10

Each correct answer was given a score of 1 mark & 0 for wrong answer

Categorization of practice score

Practice	Score
Good	8-12
Average	4-8
Poor	0-4

Each correct step was given a score of 1 mark & 0 for wrong step.

The tool used for data collection was standardized taken from https://openwho.org/courses/IPC-SP-PPE-EN. Ethical clearance was obtained from institutional ethics committee. The collected data was summarized & tabulated by descriptive statistics such as mean, mean percentage, standard deviation, correlation & inferential statistics.

Result and Discussion

The results were discussed under following sections.

Section A: Demographic variables.

Variables		Percentage	Frequency
Age in years	Up to 18 Years	0.0%	0
	19-22 Years	100.0%	60
	23 Years or Above	0.0%	0
Gender	Male	41.7%	25
	Female	58.3%	35
Domicile	Rural	65.0%	39

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	Urban	35.0%	21
Class	BSc Nursing 1st year	33.3%	20
	BSc Nursing 2nd year	33.3%	20
	BSc Nursing 3rd year	33.3%	20
Occupation of Father	Health worker	26.7%	16
	Businessman	40.0%	24
	Any other occupation	33.3%	20
Occupation of Mother	Health worker	38.3%	23
	Businesswoman	6.7%	4
	Any other occupation	55.0%	33
Previous Source of information	Family	26.7%	16
	Teachers	48.3%	29
	Health personnel	16.7%	10
	Electronic media	8.3%	5

Table 1: Frequency distribution of socio demographic variables

SECTION B:

Pre-test and Post-test knowledge & practice of subjects regarding personal protective equipment's for the prevention of Covid-19 infection.

Table 2: Pre-test level of knowledge of subjects regarding personal protective equipment's.

Pre-test knowledge	Score level	Frequency	Percentage
Inadequate	1-10	4	6.7%
Moderate	11-20	56	93.3%
Adequate	21-30	0	0%

Maximum Score=30 Minimum Score=0

Table 3: Pre-test practice related to use of personal protective equipment's for the prevention of Covid-19 infection.

Pre-test practice	Score level	Frequency	Percentage
Poor	1-4	5	8.3%

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Average	5-8	47	78.3%
Good	9-12	8	13.3%

Table 4: Post-test knowledge related to use of personal protective equipment's for the prevention of Covid19 infection.

Post-test knowledge	Score level	Frequency	Percentage
Inadequate	1-10	0	0%
Moderate	11-20	8	13.3%
Adequate	21-30	52	86.7%

Table 5: Post-test practice related to use of personal protective equipment's for the prevention of Covid19 infection.

Post-test practice	Score level	Frequency	Percentage
Poor	1-4	0	0%
Average	5-8	9	15%
Good	9-12	52	85%

SECTION C:

Effectiveness of self-Instructional Module on knowledge of subjects regarding personal protective equipment's

Table 6: Comparison of pre-test & post-test knowledge of subjects.

N=60

Paired T Test	Mean± S.D.	Mean%	Range	Mean Diff.	Paired T Test	P value	Table Value at 0.05

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PRETEST KNOWLEDGE	13.72±2.034	45.70	10-19	9.750	45.402 *Sig	<0.001	2.00
POSTTEST KNOWLEDGE	23.47±2.652	78.20	19-29				

** Significance Level 0.05 Maximum=30 Minimum=0

Table 7: Comparison of pre-test & post-test practice scores:

N=60

Paired t-test	Mean+-SD	Mean%	Range	Mean diff. value	Paired T test	P value	Table at 0.05
Pre-test Practice	6.88+-1.541	57.50	3-10	3.050	27.722*sig	<0.001	2.00
Post-test Practice	9.93+-1.528	82.80	6-12				

**Significance level 0.05. Maximum score=12, Minimum score=0.

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SECTION D:

This section deals with the association of knowledge & practice scores with demographic variables.

Table 8: Association of pre-test & post-test knowledge score with socio- demographic variables.

Association of Pretest Knowledge Scores with Selected Socio-Demographic Variables.									
Variables	**Opts**	**ADEQUATE**	**MODER**	**INADEQU**	**Chi Test**	**P Value**	**df**	**Table Value**	**Result**
Age in years	Up to 18 Years		0	0	NA				
	19-22 Years		56	4					
	23 Years or Above		0	0					
Gender	Male		23	2	0.122	0.726	1	3.841	Not Significant
	Female		33	2					
Domicile	Rural		37	2	0.424	0.515	1	3.841	Not Significant
	Urban		19	2					

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Class	BSc Nursing 1st year		17	3	3.750	0.153	2	5.991	Not Significant
	BSc Nursing 2nd year		19	1					
	BSc Nursing 3rd year		20	0					
Occupation of Father	Health worker		16	0	3.616	0.164	2	5.991	Not Significant
	Businessman		23	1					
	Any other occupation		17	3					
Occupation of Mother	Health worker		23	0	3.506	0.173	2	5.991	Not Significant
	Businesswoman		4	0					
	Any other occupation		29	4					
Previous Source of information	Family		16	0	2.752	0.431	3	7.815	Not Significant
	Teachers		27	2					
	Health personnel		9	1					
	Electronic media		4	1					

There is no significance association between the pre-test level of knowledge scores and socio demographic variables (Age, gender, domicile, class, occupation of father, occupation of mother, previous source of information). The calculated chi-square values were less than the table value at the 0.05 level of significance

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Table 9:

Association of Post-test Knowledge Scores with Selected Socio-Demographic Variables.									
Variables	**Opts**	**ADEQUATE**	**MODER**	**INADEQ..**	**Chi Test**	**P Value**	**df**	**Table Value**	**Result**
Age in years	Up to 18 Years	0	0		NA				
	19-22 Years	52	8						
	23 Years or Above	0	0						
Gender	Male	21	4		0.264	0.608	1	3.841	Not Significant
	Female	31	4						
Domicile	Rural	33	6		0.406	0.524	1	3.841	Not Significant
	Urban	19	2						
Class	BSc Nursing 1st year	15	5		5.481	0.065	2	5.991	Not Significant
	BSc Nursing 2nd year	17	3						
	BSc Nursing 3rd	20	0						

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	year								
Occupation of Father	Health worker	16	0		3.462	0.177	2	5.991	Not Significant
	Businessman	20	4						
	Any other occupation	16	4						
Occupation of Mother	Health worker	21	2		1.715	0.424	2	5.991	Not Significant
	Businesswoman	4	0						
	Any other occupation	27	6						
Previous Source of information	Family	16	0		3.422	0.331	3	7.815	Not Significant
	Teachers	24	5						
	Health personnel	8	2						
	Electronic media	4	1						

There is no significance association between the post-test level of scores and Socio demographic variables (Age, gender, domicile, class, occupation of father, occupation of mother, previous source of information). The calculated chi-square values were less than the table value at the 0.05 level of significance

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D2: Association of pre-test & post-test practice scores with selected socio- demographic variables.

Table 10:

Association of Pre- test PRACTICE Scores with Selected Socio-Demographic Variables.									
Variables	**Opts**	**POOR**	**AVERAGE**	**GOOD**	**Chi Test**	**P Value**	**df**	**Table Value**	**Result**
Age in years	Up to 18 Years	0	0	0	NA				
	19-22 Years	5	47	8					
	23 Years or Above	0	0	0					
Gender	Male	3	19	3	0.778	0.678	2	5.991	Not Significant
	Female	2	28	5					
Domicile	Rural	2	34	3	5.146	0.076	2	5.991	Not Significant
	Urban	3	13	5					
Class	BSc Nursing 1st year	3	14	3	2.148	0.709	4	9.488	Not Significant
	BSc Nursing 2nd year	1	16	3					
	BSc Nursing	1	17	2					

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	3rd year								
Occupation of Father	Health worker	2	12	2	0.694	0.952	4	9.488	Not Significant
	Businessman	2	19	3					
	Any other occupation	1	16	3					
Occupation of Mother	Health worker	1	19	3	2.498	0.645	4	9.488	Not Significant
	Businesswoman	1	3	0					
	Any other occupation	3	25	5					
Previous Source of information	Family	2	13	1	3.231	0.779	6	12.592	Not Significant
	Teachers	3	21	5					
	Health personnel	0	9	1					
	Electronic media	0	4	1					

Table shows that there is no significance association between the pre-test practice level of scores and socio demographic variables (Age, Gender, Domicile, Class, Occupation of father, Occupation of mother, Previous source of information). The calculated chi-square values were less than the table value at the 0.05 level of significance.

Table 11:

Association of Post-test PRACTICE Scores with Selected Socio-Demographic Variables.									
Variables	**Opts**	**POOR**	**AVERAGE**	**GOOD**	**Chi Test**	**P Value**	**df**	**Table Value**	**Result**
Age in years	Up to 18 Years	0	0	0	NA				
	19-22 Years	0	9	51					

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	23 Years or Above	0	0	0					
Gender	Male	0	6	19	2.723	0.099	1	3.841	Not Significant
	Female	0	3	32					
Domicile	Rural	0	5	34	0.415	0.519	1	3.841	Not Significant
	Urban	0	4	17					
Class	BSc Nursing 1st year	0	5	15	3.137	0.208	2	5.991	Not Significant
	BSc Nursing 2nd year	0	1	19					
	BSc Nursing 3rd year	0	3	17					
Occupation of Father	Health worker	0	3	13	0.294	0.863	2	5.991	Not Significant
	Businessman	0	3	21					
	Any other occupation	0	3	17					
Occupation of Mother	Health worker	0	3	20	0.383	0.826	2	5.991	Not Significant
	Businesswoman	0	1	3					
	Any other occupation	0	5	28					
Previous Source of information	Family	0	2	14	1.271	0.736	3	7.815	Not Significant
	Teachers	0	5	24					
	Health personnel	0	2	8					
	Electronic media	0	0	5					

Table shows that there is no significance association between the post-test practice level of scores and socio demographic variables (age, gender, domicile, class, occupation of father, occupation mother and previous source of information). The calculated chi-square values were less than the table value at the 0.05 level of significance.

DISCUSSION:

The present study was intended to evaluate the impact of Instructional Module on knowledge & practice related to use of personal protective equipment's for the prevention of Covid19 infection among the students of selected nursing colleges of Kashmir.

CONCLUSION:

Lack of adequate personal protective equipment's along with their improper use are the major contributing factors for increasing the number of Covid-positive cases all over the globe. The current study assessed the Impact of Instructional module on knowledge & practice related to us of personal protective equipment's for the prevention of Covid19 infection among the students of selected nursing colleges of Kashmir.

The results revealed that majority of nursing students had moderate level of knowledge and average level of practice in the pre-test. After pre-test, Instructional module was provided to study subjects to enhance their knowledge and practice regarding personal protective equipment's. In the post-test, both knowledge and practice of subjects was improved as evidenced by the adequate level of knowledge & good level of practice scores among majority of subjects in the post-test. Comparison of pre-test & post-test revealed that Instructional module was very informative and it helped the study subjects to improve their knowledge and practice related to personal protective equipment's. Hence the Self-Instructional module was competent, convenient, practicable and profitable.

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