Journal Homepage: - www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI: 10.21474/IJAR01/15976
DOI URL: http://dx.doi.org/10.21474/IJAR01/15976

RESEARCH ARTICLE

A STUDY OF KNOWLEDGE, ATTITUDE AND PRACTICES RELATED TO HAND HYGIENE AMONG FIRST YEAR STUDENTS OF NURSING AND PHARMACEUTICAL COLLEGE IN CENTRAL INDIA: COMPARATIVE CROSS SECTIONAL STUDY

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Manuscript Info

Manuscript History
Received: 31 October 2022
Final Accepted: 30 November 2022
Published: December 2022

Abstract

Aim: To assess the knowledge, attitude and practices related to hand hygiene among first year undergraduates of Nursing and Pharmacy in Durg district.

Design: Comparative cross sectional study.

Methods: Study was conducted among two groups of undergraduate students belonging to the first year of their respective course. The first group included 118 students pursuing first year of Bachelors in Pharmacy course at a private institute of pharmaceutical science and research and the other group included 181 students pursuing first year of Bachelors of Science, Nursing course at a private nursing institute located in Durg District. All study subjects were surveyed with a questionnaire regarding their Knowledge, attitude and practices related to hand hygiene.

Statistical Analysis: Shapiro Wilk test, Z- test, Mann Whitney U test.

Results: A questionnaire based responses was obtained from 299 first year undergraduate students of nursing and pharmacy. Nursing students had better knowledge (P<0.000), attitude (P=0.013) and practice (P<0.000) than the pharmacy students.

Conclusion: Our study emphasizes the need for educational and training programs about hand hygiene and its techniques, risks related to improper hand hygiene. There is also a need to augment the availability and accessibility of hand hygiene resources. Adequate knowledge and training regarding hand hygiene may help bring about a change in attitude towards hand hygiene, better compliance, reducing the transmission of infections and, ultimately, building a healthy society.

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Introduction:-

Hand hygiene is defined by WHO as a general term referring to any action of hand hygiene by using water and detergent and/or alcohol-based hand sanitizer for the removal of transient microorganisms from hands. [1]

Hand is a common source for the transmission of microorganisms. Poor hand hygiene can transmit many diseases such as upper respiratory tract infection, pneumonia, COVID-19, Tuberculosis, typhoid, cholera, hepatitis A &E. [2]

At any time, more than 1.4 million patients worldwide in developed and developing countries are affected out of which 9-15% are hospitalized and 9-37% of those are admitted to ICU (Intensive Care Unit) in developed countries. [3,4] All these health problems can be reduced by simple hand hygiene by practicing hand washing or hand rubbing. [5,6]

Healthcare workers are taught hand hygiene as a part of their curriculum from the first year and are regularly taught the same throughout their teaching program. Although, their theoretical knowledge is strong but practical aspects still need to be strengthened. A similar study was observed by Milad Hosseinialhashemi et al, health care workers, especially, the nursing staff usually have moderate to good knowledge regarding hand hygiene but the compliance practice is reported to be suboptimal. [7]

Since the advent of the COVID pandemic, a change in the culture of hand hygiene practice among the general public has also been observed.[8] A lot of awareness has been created among the general public as in one of the studies, it was found that almost 90% of participants were well aware of hand hygiene importance, duration of hand washing (i.e., at least 20 seconds), when to do hand wash, and to use at least 60% alcohol-based sanitizer. [9]

When it comes to comparison between healthcare professionals and the general public regarding knowledge, attitude, and practice of hand hygiene we have an ample amount of data for healthcare workers but we know relatively less about the general public because of a lack of studies. [8]

This study aimed to determine the knowledge, attitude, and practice among undergraduates of the health sector regarding hand hygiene and also its comparison with the general public. Therefore, undergraduate students of pharmacy were included in the study as a comparative group as they can be representative of the general public.

Material & Methodology:-

Study Design:

This is a comparative cross-sectional study.

Study Period:

The study was conducted over a period of two months.

Study Area:

Two groups of undergraduate students belonging to the first year of their respective courses were chosen for this study. The first group included 118 students pursuing the first year of Bachelor in Pharmacy course at a private institute of pharmaceutical science and research located in Durg District. The other group included 181 students pursuing the first year of Bachelor of Science, Nursing course at a private nursing institute located in Durg District.

Study Subject:

Students pursuing the first year of Bachelor in Pharmacy course at a private institute of pharmaceutical science and research located in Durg District.

Students pursuing the first year of Bachelor of Science, Nursing course at a private nursing college located in Durg District.

The study sites were purposively selected based on the criteria that both the groups are 1st-year undergraduate students. The additional criteria for the 1st year undergraduates of Nursing were that they represented subjects from the health care sector and had received basic training related to hand hygiene whereas the undergraduates of

pharmacy hadn't received training related to hand hygiene yet which makes their information regarding hand hygiene almost similar to that of the general public.

Data Collection:
A pre-designed questionnaire based on knowledge, attitude, and practice of hand hygiene was distributed among the study subjects at their respective venues. The survey questions were explained to the study group in their local languages respectively in order to rule out any errors due to language incompetency. After duly filling out the questionnaire by each candidate, they were collected by the organizing team. After the survey, an interactive workshop on basic hand hygiene and its techniques based on recommendations by the WHO was also conducted by the team in good faith of imparting the correct knowledge to the participants.

Inclusion Criteria:
All the undergraduate students who had given proper consent and were present during the study session were included in this study.

Exclusion Criteria:
All the undergraduate students who didn't give consent or were absent during the study session were excluded from the study.

Sampling Method:-
The study was carried out using a convenience sampling method.

Sample size:
1st year Undergraduate Students of B. Pharma: 118 candidates
1st year Undergraduate students of B.Sc. Nursing: 181 candidates.

Statistical test:
Appropriate statistical test was applied.

Statistical Analysis:
Score 1 was considered for each correct response and 0 for incorrect. The total number of questions regarding knowledge, attitude and practices were 11, 5 and 8 respectively. Therefore, the maximum score for knowledge, attitude and practices were 11, 5 and 8 respectively.

Z- test was used to check difference in proportion of correct responses between Nursing and Pharmacy students. The Shapiro-Wilk test was used to examine the normality of the score and it was observed that score was not normality distributed so Mann Whitney U test was used to detect the difference between average scores of Nursing and Pharmacy students. All tests were performed at a 5% predetermine level of significance.

P values: $P<0.05$ Significant,
P value [NS]: (Non-Significant)

Discussion:-
Demographic data
A total of 299 students were included in this study, of which 181 students belonged to the Nursing 1st-year and 118 students were from the pharmacy 1st-year undergraduate program.

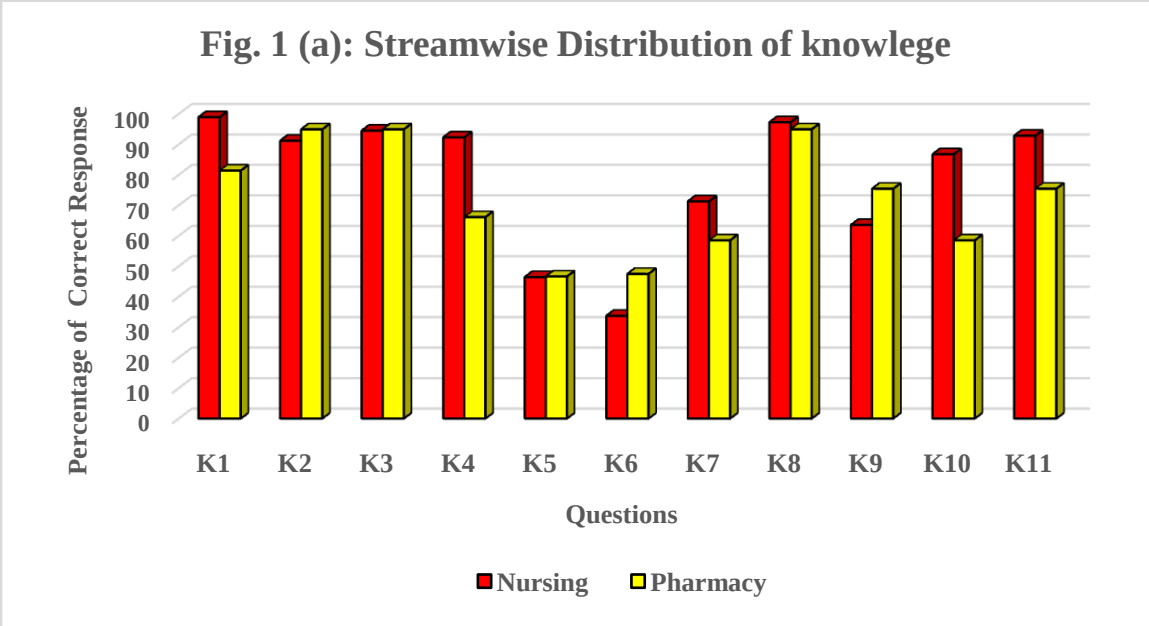
Out of all the nursing students, 78.45% were female and 21.55% were male. Similarly, out of all the pharmacy students, 39.83% were female and 60.17% were male.

Among both the streams Nursing and pharmacy, majority of the students were from Urban areas i.e., 83.43% and 71.19% respectively.(Table 1)

Knowledge
In the study when knowledge was compared between nursing and pharmacy students it was observed that the nursing students had significantly better knowledge than pharmacy students ($P<0.000$) (Fig 1 a, table3).

This may be due to the inclusion of hand hygiene techniques and their regular practice in their curriculum and they are more exposed to the clinical setup than the pharmacy students.

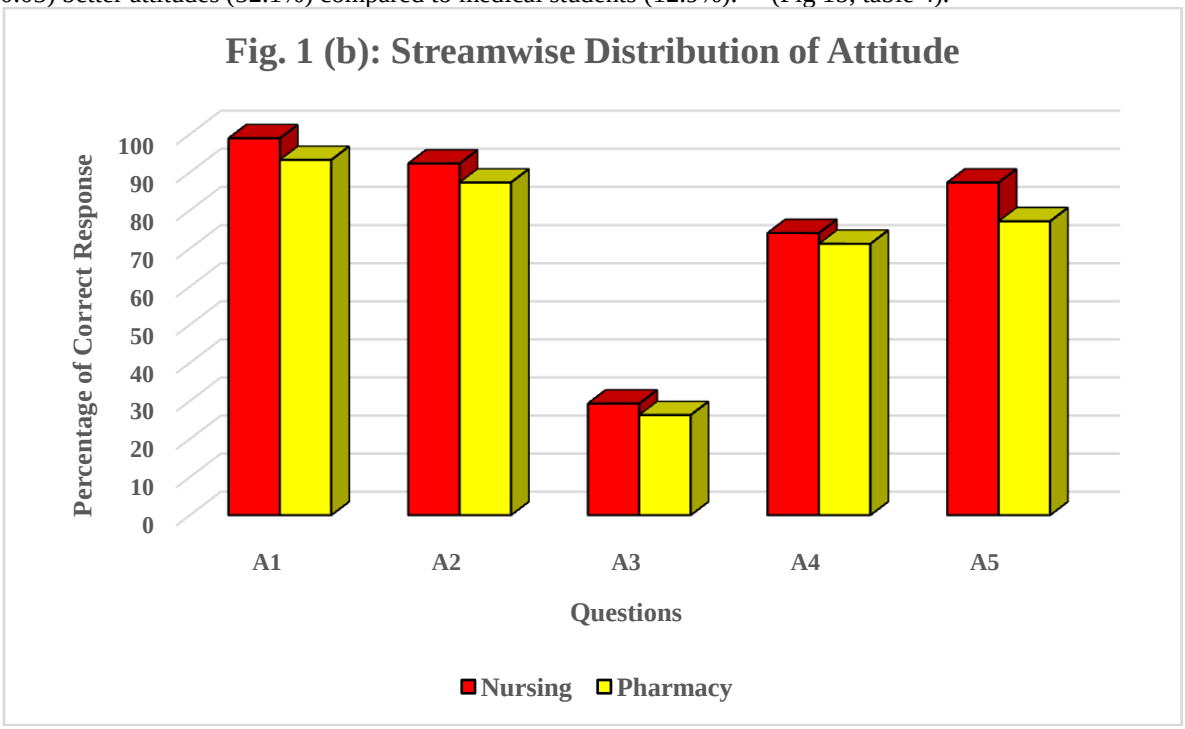
Many studies have shown satisfactory knowledge regarding hand hygiene among nursing students. [10,11,12]



Attitude

Similarly, for the attitude score, the majority of students had a positive attitude toward hand hygiene. The overall attitude of nursing students towards hand hygiene was better compared to pharmacy students (P=0.013) since it is taught in their curriculum.

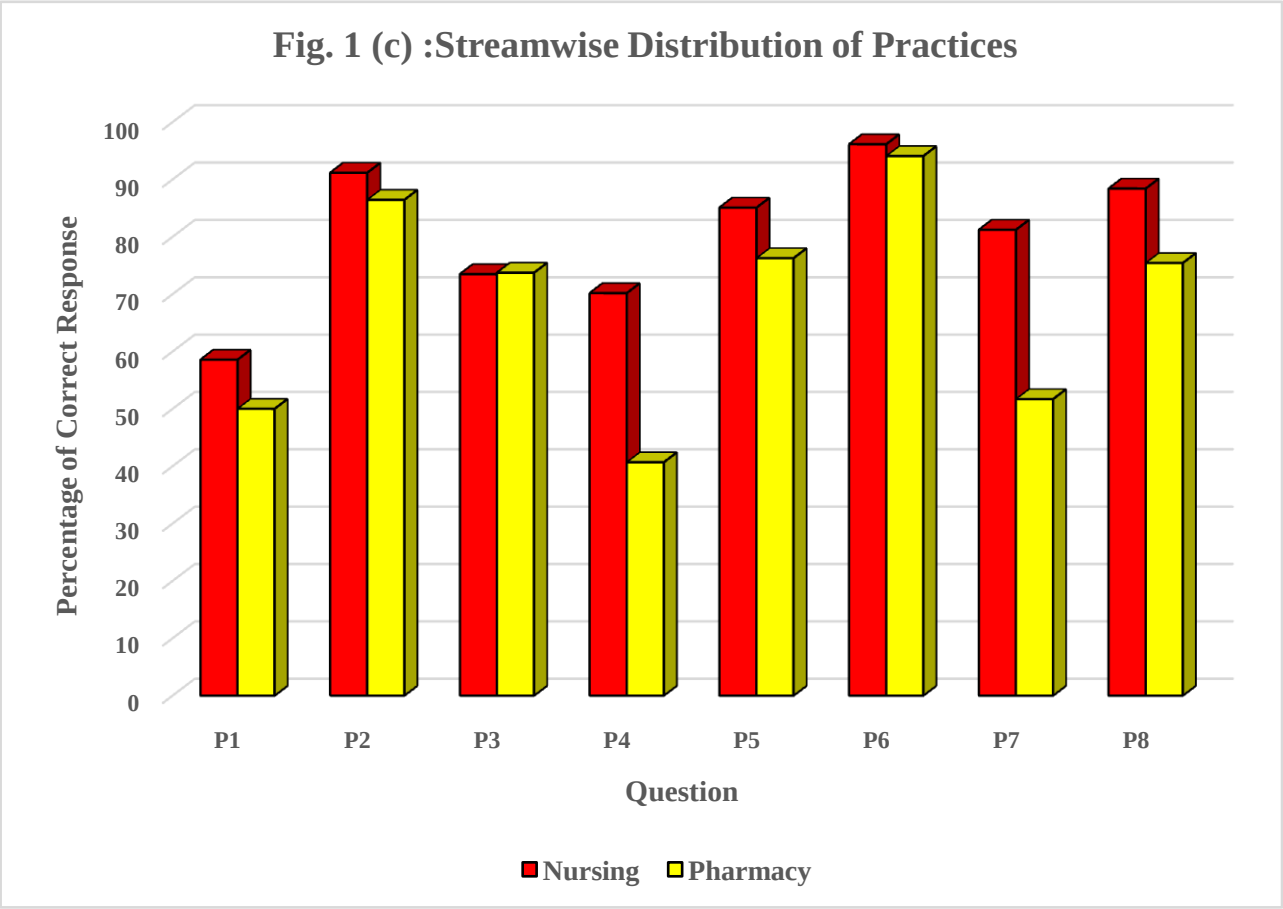
A similar study was observed by Mehta et al where it was reported that the nursing students had a significantly better attitude in terms of hand hygiene [13] and Hanumantappa et al where Nursing students had significantly ($P < 0.05$) better attitudes (52.1%) compared to medical students (12.9%). [12](Fig 1b, table 4).



Practice

With respect to hand hygiene, on comparing, the practice of hand hygiene among nursing students was found to be significantly better practice than among pharmacy students. (P<0.000)

The reason for poor adherence to the regular practice of hand hygiene among pharmacy students includes lack of proper knowledge and training, ignorance, laziness, forgetfulness, and some myths or misconceptions related to repeated hand hygiene practice.A similar study was observed by Hanumantappa et al where Nursing students had significantly (P < 0.05) better practices (62.1%) compared to medical students (19.6%) and the difference was statistically significant (P < 0.05). [12](Fig 1 c, table 5).



When question-wise comparison was made (Table 2)

Knowledge

1. (K1) The knowledge that hand hygiene practices prevent an individual from getting an infection was better in better among the Nursing students (98.9%) than the pharmacy students (81.36%) (P<0.000)
2. (K4) The nursing students (92.27%) were better aware of the steps of proper hand washing compared to the pharmacy students (66.1%) (P<0.000)
3. (K6) 47.46% of the pharmacy students believed that hot water should be used for hand washing when compared to the nursing students (33.7%) (P=0.024)
4. (K7) The nursing students (71.27%) affirmed it is better to wash hands with alcohol-based hand rubs when compared to pharmacy students (58.47%) (P=0.031)
5. (K9) 75.42% of pharmacy students believed that it is necessary to rub hands together for at least 40 seconds while washing hands using soap whereas only 63.54% of nursing students agreed for the same. (P=0.042)
6. (K10) 86.74% of nursing students affirmed that it is necessary to keep hands free of accessories (ornaments, watches, etc.) while washing when compared to pharmacy students of which only 58.47% agreed for the same. (P<0.000)

7. (K11)92.82% of the nursing students knew that it is necessary to dry their hands after washing when compared to pharmacy students (75.4%) (P< 0.000)

Attitude

1. (A1) 98.9% of Nursing students felt that regular hand hygiene is important while only 93.22% of pharmacy students agreed the same (P<0.019)
2. (A5) 87.29% of nursing students actively practiced hand hygiene more than they used to before COVID-19 whereas only 77.1% of pharmacy did the same. (P<0.032)

Practice

1. (P4)70.17% of nursing students washed their hands after handshaking whereas only 40.68% of pharmacy students did the same. (P=0.000)
2. (P6) 81.22% of nursing students washed their hands after touching animals whereas only 51.69% of pharmacy students practiced the same. (P=0.000)
3. (P7) 88.4% of the nursing students washed their hands after removing their masks whereas only 75.42% of pharmacy students agreed for doing the same. (P=0.005)

Recommendations:-

This study recognized the necessity of hand hygiene training among the public. The development of training programs and workshops related to hand hygiene is recommended. There is a need to regularly conduct such workshops to inoculate hand hygiene habits in daily life.

There is also a need to augment the availability and accessibility of hand hygiene resources.

Adequate knowledge and training regarding hand hygiene may help bring about a change in attitude towards hand hygiene, better compliance, reducing the transmission of infections, and ultimately, building a healthy society.

Limitations

The study subjects included in this study were 1st-year undergraduates of nursing and pharmacy of the particular institute which limits the sample size of the study. The study was designed to include only the 1st year nursing undergraduates who represent only a small part of the healthcare sector and 1st year pharmacy undergraduates who represent a small part of the public sector. The practice of hand hygiene among the study subjects was analyzed by survey method which is less reliable when compared to the detection of hand hygiene compliance by direct observation which is currently considered the gold standard in hand hygiene compliance monitoring.

Acknowledgements:-

We would like to thank the Principals of Shri Shankaracharya College of Nursing, Shri Shankaracharya College of Pharmaceutical sciences and Dean of Shri Shankaracharya Institute of Medical Sciences for their support, constructive comments, and encouragement in writing the review.

Ethical consents

Obtained from the institutional ethics committee.

Funding

Nil.

Conflict of interest

Nil.

Results:-

Table 1:- Demographic Characteristics of Participants.

		Nursing(n=181)	Pharmacy (n=118)	Total
Gender	**Female**	142(78.45%)	47(39.83%)	189
	Male	39(21.55%)	71(60.16%)	78
	Hindu	147(81.22%)	103(87.29%)	250
Religion	**Christian**	14(7.73%)	4(3.39%)	18
	Muslim	8(4.42%)	8(6.78%)	16
	Sikh	5(2.76%)	0(0.00%)	5
	Others	7(3.87%)	3(2.54%)	10
Locality	**Rural**	30(16.57%)	34(28.81%)	64
	Urban	151(83.43%)	84(71.19%)	235
Semester	**1**	87(48.07%)	118(100.00%)	205
	2	94(51.93%)	0(0.00%)	94

Table 2:- Question wisecomparison of Knowledge, Attitude and Practices between Nursing and Pharmacy students.

Knowledge			
Question	**Nursing n (%)**	**Pharmacy n (%)**	**P-value**
K1	179(98.9%)	96(81.36%)	0.000[s]
K2	165(91.16%)	112(94.92%)	0.323
K3	171(94.48%)	112(94.92%)	1.000
K4	167(92.27%)	78(66.1%)	0.000[s]
K5	84(46.41%)	55(46.61%)	1.000
K6	61(33.7%)	56(47.46%)	0.024[s]
K7	129(71.27%)	69(58.47%)	0.031[s]
K8	176(97.24%)	112(94.92%)	0.466
K9	115(63.54%)	89(75.42%)	0.042[s]
K10	157(86.74%)	69(58.47%)	0.000[s]
K11	168(92.82%)	89(75.42%)	0.000[s]

Attitude			
Question	**Nursing n (%)**	**Pharmacy n (%)**	**P-value**
A1	179(98.9%)	110(93.22%)	0.019[s]
A2	167(92.27%)	103(87.29%)	0.222
A3	53(29.28%)	31(26.27%)	0.664
A4	134(74.03%)	84(71.19%)	0.683
A5	158(87.29%)	91(77.12%)	0.032[s]
Practice			
Question	**Nursing n (%)**	**Pharmacy n (%)**	**P-value**
P1	106(58.56%)	59(50%)	0.181
P2	165(91.16%)	102(86.44%)	0.272
P3	133(73.48%)	87(73.73%)	1.000
P4	127(70.17%)	48(40.68%)	0.000[s]
P5	154(85.08%)	90(76.27%)	0.077
P6	174(96.13%)	111(94.07%)	0.585
P7	147(81.22%)	61(51.69%)	0.000[s]
P8	160(88.4%)	89(75.42%)	0.005[s]

Table 3:- Knowledge Score.

		Nursing		**Pharmacy**		**P-Value**
		Median	**IQR**	**Median**	**IQR**	
Gender	**Female**	9	2	9	2.5	0.409
	Male	8	1	7	3	0.004[s]
Locality	**Rural**	8	2	7.5	2	0.004[s]
	Urban	8	1.5	8	2	0.004[s]
Overall		9	2	8	2	0.000[s]
Maximum score for knowledge: 11						

Table 4:- Attitude Score.

		Nursing		Pharmacy		P-Value
		Median	IQR	Median	IQR	
Gender	Female	4	2	4	1	0.379
	Male	4	1	4	1	0.163
Locality	Rural	4	2	3	1	0.052
	Urban	4	1	4	1	0.164
Overall		4	1	4	1.5	0.013[s]
Maximum score for Attitude: 5						

Table 5:- Practices Score.

		Nursing		Pharmacy		P-Value
		Median	IQR	Median	IQR	
Gender	Female	7	1.75	6	2	0.052
	Male	7	1.5	5	2	0.001[s]
Locality	Rural	7	1.75	6	1.75	0.058
	Urban	7	1	6	3	0.000[s]
Overall		7	1	6	3	0.000[s]
Maximum score for Practices: 8						

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