

## Knowledge and Practices Regarding Infection Control Among the Health Care Professionals Working in Labor Rooms of Category-D Hospitals Peshawar.

Sehrish Gul<sup>1</sup>, Nasreen Ghani<sup>2</sup>, Muhammad Suliman<sup>3</sup>

### ABSTRACT

**Background:** Developing world is facing maternal and infant morbidities and mortalities in which the greater extents are manageable risks through infection control practices. In low-income countries, mortality related to hospital acquired infections including sepsis accounts for 36% of total newborn mortality. Despite, good patient care and global progress in reducing newborn and maternal mortality, Pakistan's existing health care system is deficiently prepared, especially for health care workers to deliver standardized care.

**Objectives:** To assess the knowledge level of gynecology department health care professionals regarding infection control. To assess the practices of healthcare professionals on infection control measures in the gynecology units especially labor rooms.

**Materials and Method:** A cross sectional study was conducted among 192 healthcare professionals including doctors, LHVs, nurses, and midwives working in the labor rooms of three category-D hospitals of district Peshawar. A questionnaire and a check list (validated) were used in the study. SPSS v. 22 was used for data analysis.

**Results:** Age was taken as a categorical variable in which 20-33 years age group accounted for 46.4%, followed by 44.8% in the age category of 34 to 47 years. Study participants included predominately nurses (57.8%) followed by 24% doctors. Half of the participants 96 (50%) were previously trained regarding infection control practices. Knowledge of hand hygiene (89.1%) and on standard precautions was 96.9%. Before attending patient only (7.3%) healthcare professionals washed their hands, while 97.4%, washed their hands after attending the patients, and needle recapping practices recorded by 81.8%.

**Conclusion:** The study findings conclude that majority of the participants have overall good knowledge, average level of awareness, and compliance.

**Keywords:** Knowledge, Infection Control practices, Healthcare Professionals, Maternal and Child Health.

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### INTRODUCTION

Maternal deaths as reported by studies occur mainly due to not practicing proper infection control guidelines along with the other causes. Almost half of the deaths occurred in six low developed countries of India, Nigeria, Pakistan, Afghanistan, Ethiopia, and the Democratic Republic of the Congo.<sup>1</sup> Pakistan is among one of those five developing countries, which are contributing half of the world's infant and under 5 child mortality rate, which is far much higher than any country in the region and almost nearly double of the global targets.<sup>2</sup> Infectious diseases are one of the highest medical problems in Pakistan and the main cause of premature deaths.<sup>3</sup> In the rural districts of KPK province, it is investigated that unavailability of prenatal care is one of the important cause of maternal mortality.<sup>4</sup>

The majority of infections related to the perineum (area around the female genital tract) of pregnant

1. Khyber Teaching Hospital & College of Nursing Peshawar.
2. Institute of Nursing Sciences Khyber Medical University Peshawar.
3. Upper Swat College of Nursing & Allied Health Sciences Farhat Abad Swat.

Correspondence: Dr. Nasreen Ghani  
Assistant Professor (MSN, CHPE, MHR), Institute of  
Nursing Sciences Khyber Medical University Peshawar.  
Email: [nasreenghani.ins@kmu.edu.pk](mailto:nasreenghani.ins@kmu.edu.pk)

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women are caused by bacterial infections.<sup>5</sup> In low-income countries, the mortality rate related to hospital infections is 36% of total newborn mortality.<sup>6</sup> A number of studies reported the commonest and leading cause of maternal mortality is the puerperal sepsis. This includes unsterilized healthcare practices along with other predisposing factors of high risk pregnancy (anemia, prolonged labour, premature membranes ruptures etc).<sup>3</sup> Similarly, Newborn susceptibilities and an infant's incidents are around 1-10/1000 live births in developed countries, but in Pakistan it is three folds higher.<sup>3</sup> Several studies in tertiary care public sector hospitals shown, that in 25% public sector hospitals of Pakistan, the essential hand washing facility is still lacking and the compliance for basic protocol rates is very low.<sup>7, 8</sup> The simplest strategy to reduce the occurrence of nosocomial infections is to maintain good hand hygiene and infection control practices in the delivery rooms and neonate-infants intensive care units.<sup>9</sup>

Among health care professionals, the lack of knowledge and awareness regarding infection control practices reduces the cure, well-being and healthcare quality of life of patients which increases the economical expenditures and burden on hospitals.<sup>10</sup> Infection control practices are very significant in health care facilities for ensuring the safety of patients, clients, health care

workers, visitors and at large the community. Furthermore, utensils and instruments also play an important role in cross-infections in the labor room.<sup>11</sup> Most of the problems arise due to the unavailability of trained workers, which compromises the effective care of mothers and newborns.<sup>12-14</sup>

Reducing child and maternal mortality is a core component of WHO sustainable development goals. The rationale for this study is infection control knowledge and practices of healthcare professionals working in maternal child health care settings of Peshawar, Khyber Pakhtunkhwa are not explored in the previous literature search. Moreover, the study will provide an insight and solid knowledge base for healthcare professionals and policy makers to emphasize, improve, and enhance the infection control practices and guidelines.

### MATERIALS AND METHODS

A Quantitative Cross-sectional study design was used and the study settings were the Labor rooms of three categories D hospitals in Peshawar, (Molvi Ameer Shah Memorial Hospital, Govt. Maternity Hospital Hashtnagri, and City Hospital Kohat, Road). The study comprised of six months from Dec, 2017 to May 2018, but due to the lock down of Covid-19 pandemics, completed it in Dec, 2018. The data was collected from the January, 2018 to February 2018 with written informed consents filled from the health care workers. Ethical approval obtained from the university advance study review board (ASRB) with diary No. DIR/KMU-AS&RB/IC/000919 and ethical review board (ERB) with diary No. DIR/KMU-EB/IC/000764.

Overall, 192 health care workers were included in the study by total enumeration/census sampling technique method, working in the labor rooms and gynaecology units of the three category-D hospitals, Peshawar. Thus in the total 192 sample size from Labor room and Gynecology units, 75 health care participants from Molvi G. Hospital, 71 from Maternity Hospital, and the rest of 46 health care workers selected from City Hospital Kohat, Road Peshawar.

Female health care workers (Doctors, LHVs, Nurses, and midwives) were selected on the basis

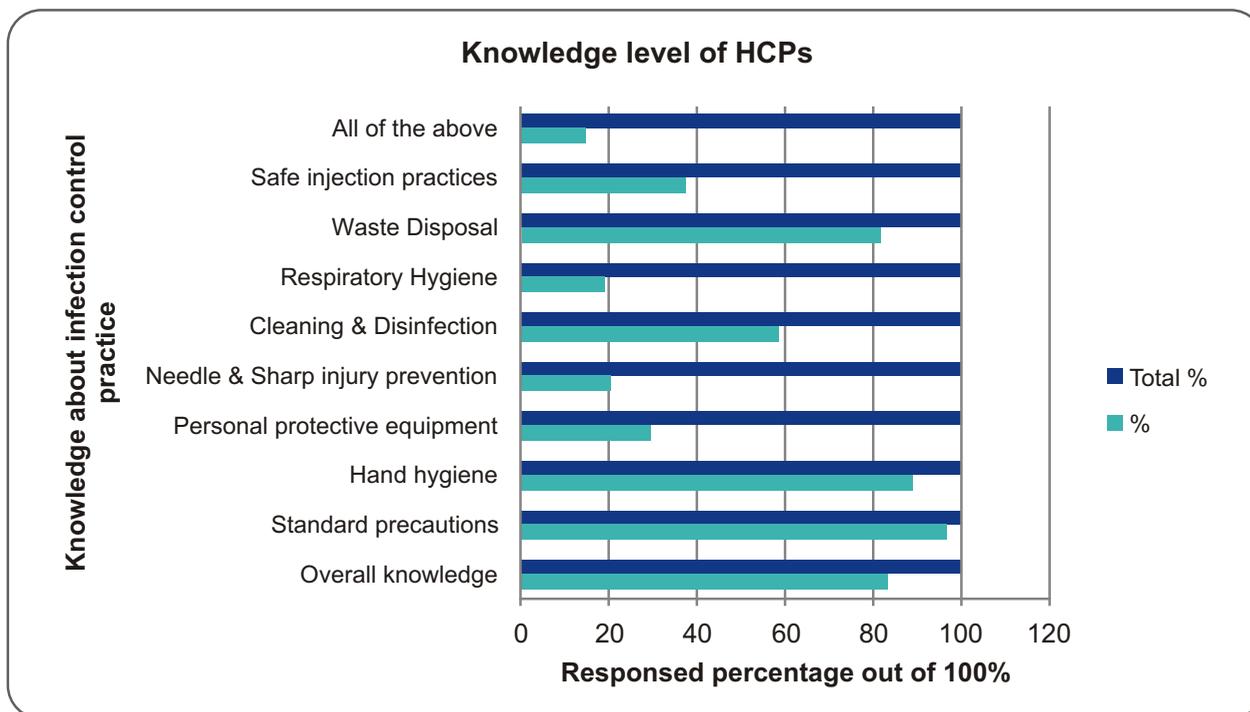
of at least 6 months and above working experience in the labor room. Health care workers who refused to participate in the study, trainees, interneers and students were excluded, those health care workers who were relievers and those absent health care workers who were on the Leave were excluded from the study. All those health care workers were excluded who worked in the operating rooms and took a part for complicated deliveries and surgical procedures or in the laboratory settings. All those managerial and supervisor level staffs were also excluded who do not take part in the direct health care provision of the patients.

A structured questionnaire was used to collect the data. Data were collected by primary investigator through Questionnaires which contained demographic section, Knowledge level regarding infection control measurement, and compliance standardized checklist on dichotomous (Likert-type) & (Yes/No) responses scales. An adopted standardized valid and reliable questionnaire for knowledge measurement was used, which already have been used in a couple of studies.<sup>5,15</sup> For compliance or attitude towards infection control practices, CDC (2016) and WHO standardized checklists adopted and responses recorded with dichotomous options of "Available/Not available and with YES/NO".<sup>3,16</sup> Data were analyzed by SPSS V. 22.

### RESULTS

Age groups 20-33 years, 34-47 years were respectively 46.4% & 44.8%. Majority of the participants were from the Molvi G. hospital (39.1%), and nurses (57.8%) were a predominant group participated. Health care professionals in the category of having experienced 10 years and above were 72.4% and only half of the participants 96 (50%) acquired formal training regarding infection control.

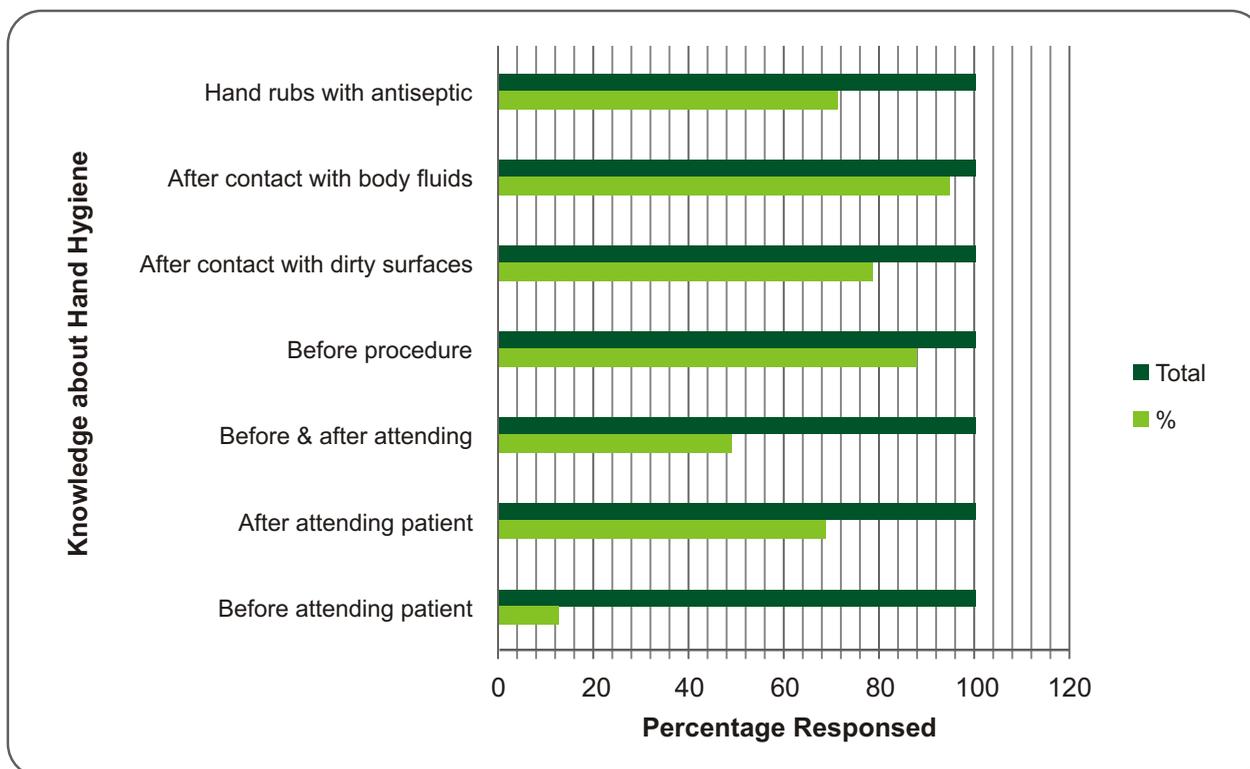
Of a total 192 healthcare professionals, 186 (96.6%) have knowledge about standard precautions, 171 (89%) know about hand hygiene as a universal precaution, 157 (81.8%) were used to waste disposals, and 113 (58.9%) were having knowledge about disinfection and sterilization. The rest of the questions on knowledge questionnaire with the responses of frequencies and percentages are shown in Graph 01.



**Graph 01. The Knowledge Level Percentage of Health Care Professionals**

To measure the knowledge level specifically about hand hygiene were also measured on the questionnaire. The responses were recorded on questions for example: washing hands before attending a patient, after attending patient, wash

their hands before any surgical or medical procedure, after contact with dirty surfaces, and after contact with body fluids etc. The responses with percentages are shown by the bar graph (02).



**Graph 02. The Knowledge of Health Care Professionals about Hand Hygiene**

The study results regarding infection control practices by healthcare professionals were obtained through dichotomous questionnaire

checklist. The responses with frequencies and percentages are shown in the table 01.

**Table 01. Health Care Workers Practices Regarding Infection Control**

Characteristics/Options N = 192 (100%)	YES		NO	
	N	%	N	%
Before touching patient	14	7.3	178	92.7
After touching patient	187	97.4	5	2.6
Wound dressing, suturing, catheterization	184	95.8	8	4.2
Touching patient surroundings	24	12.5	168	87.5
Touching any bodily fluids	186	96.9	6	3.1
Does healthcare worker wear gloves before wound dressing, medical/surgical procedure?	164	85.4	28	14.6
Are physicians and nurses or other direct service providers wearing laboratory coats?	169	88.0	23	12.0
Do healthcare workers recap used needles?	157	81.8	35	18.2

**DISCUSSION**

Although, demographic variables were not associated with knowledge and compliance level but the participants of this study mostly were among the age group of 34-47 years, which are similar to the age group of other such studies.<sup>17,18,19</sup> In this study, the professionals included nurses were 57.8%, followed by doctors (24%), and the rest of midwives were not different in terms of knowledge level and compliance. These findings are identical with the Sudanese study of Elsheikh et. al, and Ugandan study of Wasswa et. al.<sup>18,19</sup> The study of Dhedhi et. al in Karachi Pakistan on the other hand showed contrast findings, in which, doctors among the other healthcare professionals showed very good knowledge regarding infection control practices as compared to their counterparts.<sup>20</sup> According to this study results, necessary training regarding infection control were taken by half (50%) of the participants and the same results were reported in a study, in which, half of the participants had received training on infection controls, which might be a factor identified for the low level of compliance.<sup>18</sup>

Questionnaire about knowledge regarding infection control showed (83.3%) awareness among healthcare professionals and (96.6%) were aware of standard precautions, which is similar to the Nigerian study findings, in which, (89.0%) healthcare professional were aware of

hand hygiene, and (56.7%) of the healthcare workers had knowledge about hand washing.<sup>17</sup> Other findings included, 113 (58.9%) healthcare professionals were having knowledge regarding cleaning and disinfection, and 157 (81.8%) respondents were informed about waste disposal. These findings are similar to the study findings of Immanuel General Hospital, Nigeria nurses' infection control knowledge level and compliances.<sup>21</sup> On the contrary, Dhedhi et. al reasoned that education and training required and might improve the infection control health care practices of healthcare professionals.<sup>20</sup> This study results further showed that, (67.2%) respondents were familiar with infection control guidelines, which is, almost equal with the study findings of Samson-Akpan, who stated that, 69.8% participants were very knowledgeable about universal infection control guidelines,<sup>21</sup> and are in contradiction with the needle stick injury study findings of Siddique et. al, who stated that, only 21.6% healthcare professionals were found aware about universal preventative measure guidelines.<sup>22</sup> It was also reported by other studies that, healthcare workers' compliance regarding hand washing hardly ever exceeds 50%.<sup>23, 24</sup> Overall, most of this study participants had practiced hand washing, that is almost similar with several studies findings, in which, high response rate was noted in participants regarding hand washing.<sup>18</sup> This might be most of the study

participants in the sample was nurses. A Numbers of other studies also reported that nurses more often wash their hands as compared to nursing assistants and doctors.<sup>25</sup>

In compliance, (67.2%) respondents familiarized of infection control guidelines, are identical to the study findings of Wasswa P et. al, in which (69.8%) of healthcare professionals were compliant regarding infection control guidelines<sup>18</sup> but contradictory with the study findings of Siddique et. al, who reported only 21.6% participants were compliant regarding universal preventative precautions.<sup>22</sup>

### CONCLUSION

On the bases of the current study major findings, it is concluded that most of the healthcare professionals were having overall good knowledge about infection control guidelines but showed low level of knowledge in the category of respiratory hygiene, sharp and needle stick injuries knowledge (20%), knowledge about personal protective equipments (30%) and safe injection practices (37%). Questions pertinent to hand hygiene showed that only (7.3%) of healthcare professionals wash their hands before attending patients, while (71%) rub their hands with antiseptic solutions after attending patient or any procedure. In practice of infection control guidelines, healthcare professionals are compliant with some of the practices of preventative infection control measures but mostly do not wash their hands before attending patients, as well as, most of them 157 (81.8%) practice needle recapping which is a hazard for needle stick injury.

### RECOMMENDATIONS

Health department of Khyber Pakhtunkhwa also make sure the availability of sufficient infection control supplies.

In all health institutions standard protocol about the staff training as well as for acclimatizing preventive measures should be formulated.

Those health care workers and institutions should be rewarded and accredited who fulfilled the "safety measures", while those who failed to comply should be penalized or such health care practices and un-conducive health care environment should be discouraged.

Continuous professional development and

constant motivation also play key role for the desirable behavior and source of modification in cognitive and psychomotor domains, in this regard most of the health care professionals remained untrained and lack the formal training. This issue is pivotal for the policy makers to ensure the formation of infection control team in health care institutions to provide support and facilitation and maintain the standardized health care practices.

Further studies are required to be carried out in other hospitals for getting more accurate results for assessing the level of knowledge and practice on infection control among healthcare workers and after thorough comparative analysis and robust researches decisions should be made accordingly.

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**AUTHOR'S CONTRIBUTION**

The following authors full fill authorship criteria as per ICMJE guidelines;

**Gul S:** Idea conception, drafting the work, final approval, agreed to be accountable for all the work.

**Ghani N:** Design of the work, data acquisition, critical revision, final approval, agreed to be accountable for all the work.

**Sulliman M:** Data analysis, Data interpretation, drafting of the work, final approval, agreed to be accountable for all the work.