Assessment of Infection Control Among Healthcare Workers in Sana'a Healthcare Centres

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Outline

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Introduction

- Infection among healthcare worker is one of the most important problems in health care services worldwide\(^1\).

- Health care facilities around the world employ over 59 million workers who are exposed to a complex variety of health and safety hazards every day\(^2\).

- Healthcare workers, are at increased risk of occupational exposure to human blood and body fluids\(^3;4\).
The World Health Organization reports that among 35 million health workers worldwide, about 3 million sustain percutaneous exposures to the blood borne pathogens each year, including, 2 million to hepatitis B virus (HBV), 0.9 million to hepatitis C virus (HCV) and 170,000 to the human immune deficiency virus (HIV)\textsuperscript{5;6}.

The World Health Organization has estimated that in developing regions, (40\%–65\%) of HBV and HCV infections in Health care Workers are attributable to percutaneous occupational exposure\textsuperscript{7}. 

Introduction
Universal Precautions defined by the United States Center for Disease Control and Prevention (CDC) is a set of precautions which designed to prevent health care staff being exposed to blood and body fluids by applying the basic principle of infection control through:

- hand-washing
- utilization of appropriate protective barriers, such as gloves, mask, gown and eyewear, and safe handling of needles.
In Yemen like many developing countries:

- Few efforts have been undertaken to raise awareness about infection control precautions among Health care Workers and hospital managers.
- Additionally, there is a lack of regulations and policies to protect Health care Workers from exposure.
- **To our knowledge this study is the first in Yemen**
Objectives

General objective:

- The purpose of this study was to assess of Infection control among Health Workers In Sana'a Healthcare Centers

Specific objectives:

1. To identify the knowledge of healthcare workers regarding infection control
2. To determine the association between Sociodemographic factors of respondents and universal precautions.
3. To determine the association between knowledge and practice of universal precautions
Frame Work of Study

Knowledge of healthcare workers about infection control

Practices of Standard precaution

Sociodemographic of respondents

- Age
- Gender
- Marital status
- Work experience
- Medical Profession
- Level of education

Assessment

Infection Control

- Hand hygiene
- Gloves
- Facial protection (eyes, nose, and mouth)
- Gown
- Prevention of needle stick injuries
- Respiratory hygiene and cough etiquette
- Environmental cleaning
- Waste disposal
- Patient care equipment

Frame Work of Study
Methodology

A cross sectional study

237 HCWs

Study population
1- Nurses and midwife
2- Physician
3- Dentist
4- Laboratory technician

Ethical approval by UST ethical committee

Consent Form

Questionnaire

designed after
1- an extensive literature search
2- consultations with experts in the field
3- universal based questionnaire

Reliability & validity

I. Sociodemographic Factors

II. Knowledge Infection Control 10 Q

III. Practice of Universal precaution 30 Q

Statistic test

Results

0 = never
1 = sometimes
2 = always.

Good (> 75%).
Fiar (50 - 74%).
Poor (<50%).
The data were coded and analyzed by SPSS version 20. Statistical significance was assessed at $P < 0.05$.

Categorical data were displayed as frequencies, percentages, and continuous data as medians. Cross-tabulations of pairs of qualitative (categorical or ordinal) variables were produced and assessed using the Chi-square test of homogeneity.

Spearman's rank correlation Coefficient was used for the measurement of association.

In addition Kruskall-Wallis was used for comparison continuous data.
Results & Discussion

Figure 1: Percentage of (male/female) in health centers

Figure 2: Percentage of respondents in health centers
Figure 3: Distribution of medical profession

- Nurses and midwife: 50%
- Physician: 16%
- Dentist: 11%
- Laboratory technician: 19%
- Other: 4%

Figure 4: Level of education for respondents

- Primary education: 3.8%
- Secondary education: 11.0%
- Diploma degree: 44.7%
- Bachelor's degree: 33.3%
- Postgraduate: 7.2%
<table>
<thead>
<tr>
<th>Items</th>
<th>Yes(%)</th>
<th>No(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program for training on infection control guidelines</td>
<td>(29.1%)</td>
<td>(70.9%)</td>
</tr>
<tr>
<td>Program for training on the report of the event</td>
<td>(13.9%)</td>
<td>(86.1%)</td>
</tr>
<tr>
<td>Attend a training program for infection control</td>
<td>(41.4%)</td>
<td>(58.6%)</td>
</tr>
<tr>
<td>Authorized personnel to monitor infection control</td>
<td>(26.2%)</td>
<td>(73.8%)</td>
</tr>
<tr>
<td>Follow-up program for workers</td>
<td>(11.8%)</td>
<td>(88.2%)</td>
</tr>
<tr>
<td>Vaccinated against hepatitis B</td>
<td>(53.2%)</td>
<td>(46.8%)</td>
</tr>
<tr>
<td>Instructions after a needle stick accident</td>
<td>(71.7%)</td>
<td>(28.3%)</td>
</tr>
<tr>
<td>Dealing with patients as a source of infection</td>
<td>(54.0%)</td>
<td>(46.0%)</td>
</tr>
<tr>
<td>Dealing with body fluids as a source of infection.</td>
<td>(65.4%)</td>
<td>(34.6%)</td>
</tr>
<tr>
<td>All health providers are at risk of occupational infections.</td>
<td>(81.9%)</td>
<td>(18.1%)</td>
</tr>
</tbody>
</table>

**Table 1: Knowledge of Health Care Workers Regarding Infection Control (n=237)**
<table>
<thead>
<tr>
<th>Medical profession</th>
<th>Hand washing Median Total =18</th>
<th>Gloves Median Total =8</th>
<th>Face mask Median Total =10</th>
<th>Sharp management Median Total =10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurses and midwife</td>
<td>15.00</td>
<td>7.00</td>
<td>6.00</td>
<td>8.00</td>
</tr>
<tr>
<td>Physician</td>
<td>14.00</td>
<td>8.00</td>
<td>7.00</td>
<td>9.00</td>
</tr>
<tr>
<td>Dentist</td>
<td>16.00</td>
<td>8.00</td>
<td>9.00</td>
<td>10.00</td>
</tr>
<tr>
<td>Laboratory technician</td>
<td>15.00</td>
<td>5.00</td>
<td>6.00</td>
<td>9.00</td>
</tr>
<tr>
<td>Other</td>
<td>14.00</td>
<td>7.00</td>
<td>8.00</td>
<td>9.00</td>
</tr>
</tbody>
</table>

\[
Z\text{-value}^* = \begin{bmatrix} 0.001 \\ 0.001 \\ 0.001 \\ 0.001 \end{bmatrix}
\]

\[
P\text{-value}^{**} = \begin{bmatrix} 0.008 \\ 0.001 \\ 0.002 \\ 0.012 \end{bmatrix}
\]

* Kolmogorov-Smirnova ** the significance level is 0.05.

**Table 2: Median Score for Selected Universal Precautions by Medical Profession**

The median scores for the selected items of universal precautions showed **significantly different** scores between the professions for hand washing practice, use of gloves, use of a face mask, and sharp management. **Dentist** having the **highest** median for the selected items, and then physician.
Data from the study revealed the **low awareness of knowledge** about infection control, Unlike other studies who reported the **highest good knowledge** in regards to infection control. (Alice.et,al,2013) and (Isara.et,al,2010¹⁴;¹⁶)

**This may attributed to**
1. poor infection control programmes and policies.
2. insufficient information of knowledge and practice
3. may still be deficient due to a lack of training and continuing education about infection control.

![Figure 5: Practices and knowledge level of respondents](image)
The highest proportion of the nurses and midwife were found to have a more knowledge and practices than other health workers.
We found that the respondents a good practice (57.4%) was higher than (46.8%) what was reported by (Alice.et.al, 2013) in contrast to (Motamed.et.al 2006) who reported lower (71.7%) good practices of universal precautions.

Generally the low practices of universal precautions among workers is in agreement with (Vaz.et.al 2010, and Kermode ,et.al 2005) and contrary to what was observed by (Labrague et.al 2012).

Figure 5: Practices and knowledge level of respondents
The finding of **better practice of universal perfections** among nurses and midwifery compared to other professions.
Table 3: Practices and knowledge level of respondents

<table>
<thead>
<tr>
<th>Sociodemographic item</th>
<th>Level the Knowledge of infection control</th>
<th>Level the Practices of universal precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$P$-value</td>
<td>$P$-value</td>
</tr>
<tr>
<td>Type of center</td>
<td>0.018*</td>
<td>0.273</td>
</tr>
<tr>
<td>Age Group (years)</td>
<td>0.387</td>
<td>0.134</td>
</tr>
<tr>
<td>Sex</td>
<td>0.060</td>
<td>0.236</td>
</tr>
<tr>
<td>Marital Status</td>
<td>0.110</td>
<td>0.269</td>
</tr>
<tr>
<td>Medical Profession</td>
<td>0.492</td>
<td>0.001**</td>
</tr>
<tr>
<td>Level of Education</td>
<td>0.533</td>
<td>0.006**</td>
</tr>
<tr>
<td>Work Experience (years)</td>
<td>0.530</td>
<td>0.001**</td>
</tr>
</tbody>
</table>

*p<0.05, **p<0.001

The practice was significantly associated with the profession, level of education and work experience.
Table 4: The Association between Knowledge and UPs Practice.

<table>
<thead>
<tr>
<th>Correlations</th>
<th>Spearman's Correlation Coefficient (r)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.236*</td>
<td>0.001**</td>
</tr>
</tbody>
</table>

The significant positive correlation between knowledge of infection control and practice of universal precautions is likely to that reported by (Luo et al, 2010, and Chan et al, 2008, 24;25.) This reinforces the needs for training in universal precautions.

**Correlation is significant at the 0.01 level (2-tailed),**

(r) Correlation Coefficient
Conclusion

• The findings of this study emphasized the needs for intensive enlightenment programmes to educate health care workers on various aspects of standard precautions and infection control programmes and policies.
Recommendation

These findings indicate the following recommendations:

1. Employing only qualified and trained personnel in health care settings, especially when handling of blood and sharp objects is required.

2. Training health care workers (pre- and in-service) about bloodborne infections and universal blood precautions through regular scientific meetings and training courses.

3. Strict observation of HCWs during work and continuous evaluation of their practice and correction of poor practices.

4. A protocol for universal blood precautions, needle-stick injuries and infection control should be used in both government and private units.
Thank You
REFERENCES


• In the present study, we have found a high proportion of compliance hand washing practice items. Whereas hand washing Before and after any direct patient contact and Wears gloves when touching blood or other body fluid or mucus membrane were approximately similar to what was reported by\textsuperscript{14}.

• This might be attributed to their often times greater perception of risk, and the fact that their work often necessitates handling waste, and hand washing thereafter becomes needful.
Generally, Good Sharp management items in our study Recapping after using were practiced at a lower rate than what was reported by previous studies \(^{14;17;18;19;20}\).

Our study also found that the disposing of used needles and other sharp instruments immediately in safety box was similar to reported by a recent study \(^{14}\).
The highest proportion of the nurses and midwife were found to have a more knowledge and practices than other health workers.

While our study was revealed an equally observed in a study carried out by, and is not surprising as Nurses and midwives which have more numerous than others in the health team.

Figure 6: Good knowledge among medical profession
The finding of better practice of universal perfections among nurses and midwifery compared to other professions is in agreement with in contrast to other previous studies. This discrepancy may attributed to low awareness of universal precautions among different health care workers.