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Knowledge, attitude and perceived adherence with universal precautions among health care workers in the obstetrics and gynaecology department of an Indonesian teaching hospital

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Abstract

Health care workers (HCWs) are at a high risk of occupational blood-borne infections, which may be increased in low and middle income countries by low adherence to Universal Precautions (UP). A baseline survey of Knowledge, Attitudes and Perceived adherence (KAP) was executed to design evidence-based tailor made interventions. A cross-sectional, descriptive study using self-administered questionnaires was conducted among HCWs in the obstetrics and gynecology department of an Indonesian teaching hospital from September-October 2007. The survey included 524 HCWs with a response rate of 72% (n=377). The results indicated that the level of knowledge regarding hand washing, personal protective equipment,

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medical waste disposal and post exposure prophylaxis was high, over mean score of 71.8. However, level of knowledge regarding instrument processing and medical sharps disposal was low. Perceived adherence was low as reported by majority of respondents (95%). There was significant association between knowledge and attitude (r=0.235; P<0.001); knowledge and perceived adherence (r=0.314; P<0,001); attitude and perceived adherence (r=0.233; P<0.001). This study suggest tailor made interventions were needed to improve adherence to UP.

Key words
Universal Precaution, Blood-borne Infection, Health Care Worker, Knowledge, Attitude, Perceived adherence.

Introduction

Health care workers are at risk for blood-borne infections through sharps injuries. One factor which might increase the risk in low and middle income countries is low adherence to universal precautions. Much research has been conducted concerning this topic globally, but little in Indonesia. This paper reports knowledge, attitude and perceived adherence to universal precautions among health care workers in an Indonesian setting.

Background

Exposure to blood-borne infections (BBI) poses a serious risk to health care workers (HCWs). WHO estimates that 40%-65% of hepatitis B virus (HBV) and hepatitis C virus (HCV) and 2.5% of HIV infections in HCWs are occupationally acquired, and 90% of occupational exposures occur in developing countries.[1]

The risk of occupational BBI for HCWs in low and middle income countries like Indonesia is high due to crowded hospitals, high patient load per HCW, limited knowledge of risks, inadequate personal protective equipment (PPE), lack of sharps containers, limited knowledge and utilization of Post Exposure Prophylaxis (PEP), low adherence to Universal Precautions (UP), high prevalence of patients with BBI and low hepatitis B vaccination coverage among HCWs.[2-4] As 2 million cases of HCV and 21 million of HBV infections are due to unsafe therapeutic injections,[5] poor adherence to UP puts both patients and HCWs at risk of BBI.

Several factors associated with HCWs adherence to UP standards have been documented.[6,7] Bolyard reported that HCWs often have limited knowledge and training of infection control in their implementation during daily patient care.[8] Poor knowledge has been associated with poor attitude and poor practices of UP.[9]

Poor practices in medical care contribute to the incidence of needle-stick injuries. In hospital settings, surgery, obstetrics and gynaecology (ob-gyn) and orthopaedics are the most risky departments for needle-stick injury, however most injuries remain unreported.[10] A nation-wide Danish hospital survey revealed that on average 11% of all HCWs sustained a needle-stick injury every month.[11] In a German university hospital 47% of medical staff in surgery and 19% of HCWs in paediatric department reported at least one needle-stick per year.[12]

In Indonesia, UP have been implemented in all major hospitals and health care facilities; however a survey of 400 HCWs in a referral hospital revealed that 55% reported ≥1 needle-stick injury per year.[13] This survey indicated the need for improving HCWs' adherence to UP. Nonetheless, little is known of the adherence to UP among HCWs throughout the country. This study aims to determine knowledge, attitude and perceived adherence to UP among HCWs in the ob-gyn department of an Indonesian teaching hospital. The findings may provide baseline data to design evidence-based tailor made interventions to improve HCWs adherence toward UP.

Methods

We conducted a cross-sectional study among HCWs in the Department of Obstetrics-gynaecology (ob-gyn)

in a teaching hospital which is the top referral hospital in West Java Province in Indonesia, in September - October 2007.

All staff (specialists, nurses, midwifes, students of medical, nursing and midwifery, and residents), in direct contact with patients or their body fluids, or involved in patient samples/specimen collection, were studied. Data were collected using a self-administered anonymous questionnaire consisting of 182 close ended questions.

The questionnaire was divided into three parts. The first part asked about socio-demographic and current working unit of the respondents, the second about occupational injury, risk and implementation of UP: evidence of sharps and splash injury, perception on BBI risk, willingness to be tested for BBI, attendance to UP training, perception of Standard Operational Procedures (SOPs), perceived barriers for UP implementation, and the last part was about KAP on UP standards.

KAP was assessed by 41 questions on 6 UP standards containing hand washing, PPE, instrument processing, medical sharps disposal, medical waste management and PEP. Knowledge was obtained by summing up the score from each answer (correct answer = 1, wrong answer/do not know = 0). Levels of knowledge were analyzed for mean scores with standard deviation. Attitude and perceived adherence on UP were measured using Likert-type scale questions. Attitude was measured by a scale from strongly agree to strongly disagree for each item, then each answer was scored from 0 to 3, perceived adherence was measured on scaled of 0 = never to 3 = always. Favorability and adherence were assessed by comparing the score to total score.

Data were handled by not more than two professionals and analyzed using SPSS version 13. We performed univariate analysis and correlation analysis within KAP variables and between KAP and sharps injuries variables. Ethical clearance was attained from Faculty of Medicine ethics committee before the study. The study was supervised by Quality and Occupational Safety Committee (QOSC) and head of the ob-gyn department.

Results

The questionnaire was completed by 377 (72%) of 524 HCWs including 27 ob-gyn specialists, 67 residents, 104 nurses and midwives, 66 medical students and 113 nursing and midwifery students; with a mean age of 30.1 (SD = 11.24, median age of 25), 34% were male. About half the ob-gyn staff and students worked in high stress workplaces (delivery rooms, ob-gyn emergency rooms and operating theatres; see Table I). Not all replies were fully complete, so numbers less than 377 are given where relevant.

Table I. Overview professions by working unit (N=372)

Profession	Ward	Delivery Room	Emergency Room	Out-patient Clinic	Operating Theatre	Prenatal Ward
Ob-gyn Specialist	11	2	7	5	2	0
Ob-gyn Resident	29	10	18	6	3	0
Nurse and midwife	46	9	20	6	1	21
Medical student	18	6	10	29	0	0
Nursing/Midwifery student	82	1	1	24	0	5
ALL RESPONDENTS	**186**	**28**	**56**	**70**	**6**	**26**

Table II. Favorability of Attitude and Perceived adherence on Universal Precaution standards (N=377)

N(%)	Hand-washing	Personal Protective Equipment	Instrument processing	Medical sharps disposal	Medical waste disposal	Post Exposure Prophylaxis	Total respondent
Attitude							
Un-favorable	0	0	1 (0.3%)	0	0	0	0
Less favorable	9 (2.4%)	45 (11.9%)	126 (33.4%)	8 (2.1%)	15 (4%)	6 (1.6%)	0
Favorable	307 (81.4%)	268 (71.1%)	221 (58.6%)	274 (72.7%)	194 (51.5%)	308 (81.7%)	338 (89.7%)
Highly favorable	61 (16.2%)	64 (17%)	29 (7.7%)	95 (25.2%)	168 (44.6%)	63 (16.7%)	39 (10.3%)
Perceived Adherence							
Non adherence	0	3 (0.8%)	0	0	28 (7.4%)	11 (2.7%)	3 (0.8%)
Low adherence	4 (1.1%)	105 (27.9%)	42 (11.1%)	51 (13.5%)	68 (18%)	153 (40.5%)	358 (95%)
High adherence	72 (19.1%)	248 (65.8%)	150 (39.8%)	273 (72.4%)	168 (44.6%)	155 (41.2%)	16 (4.2%)
Full adherence	301 (79.8%)	21 (5.6%)	185 (49.1%)	53 (14.1%)	113 (30%)	58 (15.5%)	0

A total of 180/376 (48%) respondents experienced occupational sharps injuries and 233/376 (62%) experienced splash injuries at least once in the last year. 77% of sharps injuries were sustained during patient handling situations such as giving injection/ IV line and suturing; 32% were caused by recapping needles with two hands, 15% when cleaning up instruments or discarding waste and 7% by bending a needle. Occupational sharps injuries happened frequently (44%) during the night shift, 34% occurred during the morning shift.

Almost all the staff and students (94%) perceived themselves at risk for occupational BBI. Only 2.5% of them perceived a low risk, 24.5% perceived a moderate risk and 71% a high risk. This high perceived risk went together with a high perceived need for an individual sero-status examination: ranging from 79% for HIV to 96% for HBV.

Most (305/377) of the staff had had training on UP (90% of medical staff and students, 73% of nurses and midwives and 85% of nursing and midwifery students). The number of HCWs attending hospital infection control training drastically increased from 2006 to 2007 (see Figure 1).

SOPs on UP were well known. Knowledge of availability of SOPs scored as follows; Hand washing 97%, PPE 63%, instrument processing 55%, sharps

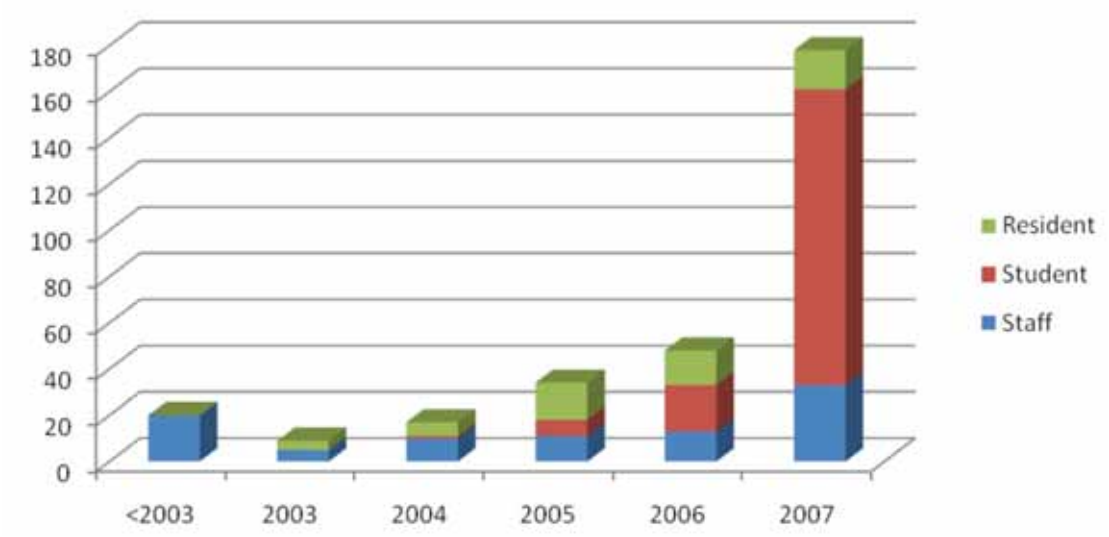

Figure 1: Number of Health Care Workers trained in Universal Precautions by year

waste disposal 74%, medical waste management 57% and PEP45%. Comprehension of three SOPs had high scores (hand washing 97%, PPE 89% and sharp waste disposal 80%). Perceived barriers for UP implementation were dealing with short supply of PPE (73%) and working in an emergency (65%).

Knowledge of UP was fairly good, means of correctness level reached 71.8% ± 7.56 with maximum value of 100%. Knowledge of hand washing, personal protective equipment, medical waste disposal and post exposure prophylaxis was high, both among staff and students. However, knowledge of instrument processing and medical sharps disposal was poor, especially among the students. All respondents showed favorable attitude on UP but almost all (95.8%) reported low adherence to UP standards (Table II). The findings were similar even when we analyzed replies into staff, residents and students groups.

Weak association was found between knowledge and self-reported attitude ($r = 0.235$; $P<0.001$); knowledge and perceived adherence to UP standards ($r=0.314$; $P<0,001$); attitude and perceived adherence towards UP ($r=0.233$; $P<0.001$). A negative association was found between knowledge and rate of sharp injuries ($r= - 0.133$; $P=0.01$). There were no significant correlations between episode of sharp injuries and attitude on UP ($r= - 0.067$; $P=0.196$) as well as perceived adherence to UP ($r= - 0.015$; $P=0.777$).

Discussion

In order to develop evidence based tailored made interventions and reduce risks, it is important to improve the knowledge and attitude of HCWs to occupational blood-borne exposure. Comprehensive understanding and favorable attitudes to occupational risk will enhance adherence to UP standards.

The response rate of 72% illustrated deep concern of HCWs about their health and safety. Almost all HCWs working in the ob-gyn department perceived themselves at high risk for occupational exposures and almost all expressed their willingness to know their individual HBV, HCV and HIV serological status. The subjects' perceived need for sero-status examination pointed high motivation to improve infection control of occupational BBI risk among HCWs. The gradual increase in staff and students attending training sessions on UP since 2004 was an effect of increasing activity of QOHSC, Department of Education and Training together with the Hospital Infection Prevention Team and meant that knowledge of HCWs on UP was good. Despite this and a universally favorable attitude, we found that perceived adherence to UP was reported as low by most HCWs, and in reality incidence of

occupational sharp and splash injuries was high. Although SOPs on UP were available, not all staff and students understood the procedures.

However, the sharps injury level of 48% is comparable with other teaching hospitals. In Frankfurt (Germany) University Hospital 47% of the physicians incurred at least one needle-stick injury per year.[12] In a Japanese hospital, 46% nurses experience sharps injuries caused by ampoules and vials.[14] A study from Pakistan revealed that 53% of sharps injuries happened among HCWs at community care facilities,[15] which was higher than in hospital settings. The occurrence of sharps injuries was slightly lower in this study than in a previous study at our hospital in which 55% of HCWs from many departments got sharps injuries in one year.[13] This might be because our study was conducted after implementation of UP standards. However, more study of the prevalence of BBI in the ob-gyn patient's population is needed to further analyze the burden of occupational risk transmission among HCWs caused by sharps injury.

Knowledge of UP had a weak association with attitude, perceived adherence and suffering of occupational sharp injuries. Attitude on UP was weakly associated to perceived adherence. These results might lead to conclusion that other factors than individual knowledge; i.e, attitude and adherence may play a role in the occurrence of occupational sharp injuries. It seems that handling patients during night shifts or under pressure result in high level of occupational accidents. Given positive attitude towards UP, the survey results offer enough information to initiate a department-wide intervention to strengthen adherence to UP standards and reduce risk of occupational BBI. Further observation of patient handling situations is needed, aiming at the specific professional, environmental, patient and service related factors that contribute to the high level of occupational exposures, such as during injections/IV line and suturing, particularly during night shifts.

Learning from perceived barriers to adherence, this survey also challenges the department management to remedy the short supply of PPE and to develop strategies towards allowing ob-gyn staff and students to work safely in a high stress / urgent response setting.

Conclusion

In conclusion, this study showed that although the HCWs' Knowledge on UP was good and all respondents showed favorable attitudes to UP, most HCWs reported low adherence to UP standards. There is a need for continuous and appropriate training on UP for both senior and junior HCWs. The implementation of SOPs on accident reporting and PEP is advisable. All occupational accidents should be reported to allow adequate management and prevention of further injuries.

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