

## Evaluation of trait anxiety levels between exposed and non-exposed health care workers to needle stick in Isfahan Al-Zahra hospital

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### ABSTRACT

**Background and Objective:** Injury with contaminated sharp devices like needles has the great potential occupational risk factor in health care workers (HCWs). Aim of this study was to evaluate trait anxiety level between exposed and non-exposed HCWs to needle stick.

**Methodology:** This present case-control study was performed on 48 exposed (case) and 48 non-exposed (control) HCWs. The self-reporting of trait anxiety in HCWs was determined by State-Trait Anxiety Inventory (STAI). Cases group were exposed to needle stick one month ago and control group were not exposed to needle stick since last two year ago.

**Result:** Independent t-test showed that mean scores of trait anxiety between two groups (exposed and non-exposed health care workers to needle stick) did not have a significant difference. But trait anxiety level was higher in case group compared to control group. Independent t-test also revealed that control group had a more experience than case group significantly ( $p < 0.001$ ).

**Conclusion:** Base on these results one can conclude that trait anxiety level is equal between exposed and non-exposed to needle stick HCWs. It seemed that trait anxiety as a psychological factor had not effective parameter on exposure to needle stick in the case group.

**KEY WORDS:** Trait anxiety, Needle stick, Health care workers.

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### INTRODUCTION

Health care workers (HCWs) in hospitals are among those at highest risk of occupational hazard, infection from biological factors, as they are exposed to human body fluids daily. Every year, hundreds of thousands of HCWs are at risk of occupationally acquired blood borne diseases as the result of needle-stick and sharps injuries (NSSIs).<sup>1,2</sup> NSSIs are an important occupational hazard in health care, and

the distribution of risk does not occur at random.<sup>3</sup> NSSIs have been one of the major issues in the protection of HCWs, and vigorous preventive action has been practiced worldwide in recent decades. NSSIs may lead to serious and potentially fatal infections from blood borne pathogens such as hepatitis B virus (HBV), hepatitis C (HCV), or human immunodeficiency virus (HIV)<sup>4</sup> and other blood borne pathogens including cytomegalovirus, herpes simplex virus and parvovirus B19.<sup>5</sup>

The Centers for Disease Control and Prevention (CDCs) have strongly supported the prevention of occupational sharps injuries<sup>6,7</sup>, however, NSSIs still remain a major risk for HCWs.<sup>2,8-10</sup> All health care providers who perform invasive procedures with sharp instruments are at risk for injury.<sup>5</sup> These includes injuries from syringes, sewing needles, and other sharp objects.<sup>8</sup>

Needle stick and their injuries can result in substantial health consequences and psychological

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stress for providers and their loved ones.<sup>11,12</sup> HCWs are known to be exposed to anxiety, occupational stress, depression and other psychological problem.<sup>13,14</sup> that this psychological disorder can be effective in human mistakes as needle stick that is known as medical errors because this psychological effects leads to decrease in memory function, attention and finally this factors have a negative effect on proper human function.<sup>15,16</sup>

A recent review, that included 36 studies from various countries, reported a prevalence rate of major for anxiety disorders (DSM-IV and sub threshold anxiety disorders) prevalence rates ranged from 9.9% to 13.2%.<sup>18-20</sup>

The aim of this study was to evaluate level of trait anxiety and personal characteristic difference for prevalence causes and the risk factors for needlestick injuries among HCWs in two group (case and control) in Iranian University Hospital.

## METHODOLOGY

**Subjects:** In this study 96 HCWs (including 48 case, 48 control) were chosen voluntarily and simple randomly. Their average (standard deviation) of age and work history for case (control) were 29.72 (6.26) years and 31.02 (8.25) years respectively. The inclusion criteria for two groups were having at least 4 year work history, not suffering from psychological disorder receiving any sedatives drug. The inclusion criteria for case group was exposed to needle stick during one month ago and for control group were not exposed to needle stick since last two years. Exclusion criteria was, not willing to co-operate, not filling out the questionnaires completely (two of the participants were removed).

**Instruments:** This present case -control study, trait-anxiety measured by state trait anxiety inventory (STAI)<sup>20</sup> that has the Likert scale and its divisions include "almost never" with grade "1" to "almost always" with grade "4. This questionnaire was used in the research by Panahishahri<sup>21</sup>, in Iran and had high intra-class correlation coefficients and the average reliability ratio in different groups was reported to be 92% for the state anxiety, and 90% for trait anxiety measures.

## RESULT

Statistical analysis between case groups showed that women HCWs (76.4%) more than man (23.6%) were exposed to needle stick, independent t-test revealed that trait anxiety level between two group had no significant difference, but mean  $\pm$  standard of trait anxiety scores in case group ( $40.60 \pm 6.42$ )

Table-I: Frequency needle stick injuries among health care workers.

Type of HCWs	Frequency	Frequency %
Registered nurse	20	41.6%
Auxiliary nurse	9	18.7%
Student of nurse	8	16.6%
Hospital cleaners	6	12.5%
Operating Room Technician	2	4.16%
Laboratory sampler	2	4.16%
Midwife	1	2.08%
Total	48	100%

was higher than control group ( $39.89 \pm 7.99$ ). Independent t-test also revealed that mean  $\pm$  standard deviation of work experience in control group ( $13.47 \pm 7.52$ ) was more than case group ( $7.33 \pm 5.72$ ) significantly ( $p < 0.001$ ). Registered nurse have a most expose to needle stick in case group (Table-I).

## DISCUSSION

To our knowledge present study is the first report on the effects of psychological factor in exposure to needle stick and sharp injures in HCWs. So the purpose of this study was to answer the question, whether trait anxiety in HCWs who are exposed to needle stick had a notable difference with group that was not exposed to needle stick.

However, statistical analysis revealed that trait anxiety between two groups have not significant difference, only trait anxiety level in case group was higher than control group. So base on present study findings and numerous other studies, HCWs especially nurses have a high level of stress, fear, anxiety and depression relative to other jobs. Moderate and high level of trait anxiety base on theory can be negative and destructive effect on mental and physical function of human because mental attention human in two level of anxiety significantly decrease, this decrease and this reduction in mindfulness is because of increase in mistakes. Hence result of this study can be interpreted that because trait anxiety in both group (exposed and non-exposed to needle stick) had an equal level so effect of anxiety on both group is equal this means that cognitive factor such as (anxiety) for both groups are equally shared at risk of exposure to sharp injures. In a previous study Martin Smalbrugge et al 2006 founded that two cognitive factors: anxiety and depression have a negative effect on well-being in care of patient.<sup>22,23</sup>

Another finding in present study was that HCWs in case group significantly had a less work experience than control group, based on numerous studies about effects of exposure to needle stick that are

published, work experience and practical education have a main share in exposure to needle stick. This study also showed that a large number of HCWs who are exposed to needle stick are student nurses and auxiliary nurses. This also showed that two groups do not have enough experience and this requires more personal attention and practical training. Because of little experience student and auxiliary nurses were more likely to be at risk to make an error (exposure to needle stick) than HCWs that have enough practical experience. This is in accord with previous study by Mahmodyaghobi 2003 in Malaysia (about causes of exposure to needle stick in student which showed that all the final year students were exposed to the risk of exposure to blood-borne disease such as HIV, Hepatitis B and C through needle stick injury since all of them handled hollow-bore to perform procedures on patients in their routine clinical activities and the incidence of episodes of needle stick injury among the final year medical students was high, i.e. 20.9%.<sup>24,25</sup>

### CONCLUSION

Present study has showed that trait anxiety between exposed and non-exposed HCWs to needle stick was not different significantly. As such HCWs, due to high level of anxiety than others, should get attention from health manager to reduce their anxiety level in high risk exposure occupations. In addition practical education, based on safe work instruction in use of sharp instruments, is very important for preventing needle stick injuries in Health Care Settings.

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