

A Descriptive Cross Sectional Study to Access the knowledge and practice of Nurses Regarding Needle Stick Injury in Allied Hospital Faisalabad

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Abstract

The waste which is generated from medical activities can be toxic and dangerous for the health of the health care provider. Blood borne diseases are spreading through these activities. The purpose of this study was to determine the exposure to work related sharp injuries among nurses and the frequency of contact with the needles and other sharp devices.

Objectives: Objective of this study was to assess the knowledge and practice of nurses regarding needle stick injury in Allied hospital Faisalabad.

Material and methods: Study was carried out in Allied Hospital Faisalabad from January to April in 2019. The sample size was 50. consecutive sampling technique was used. Structured questionnaire was used for data collection. Spss version 20 was used for data analysis.

Results: Results of the study were unsatisfactory. The nurses have insufficient knowledge and poor practice. 46% nurses have sufficient knowledge and 54% nurses have insufficient knowledge. 36% nurses have good practice while 64% nurses showed poor practice.

Conclusion: Study results illustrates that the nurses of Allied hospital Faisalabad have insufficient knowledge and poor practice regarding needle stick injury. No protective measures used by them. They showed poor practice due to deficit knowledge. They need to improve their knowledge and practice.

Key words: Blood borne diseases, hepatitis, needle stick injuries, sharp injuries

Introduction:

Needle stick injuries means when the infected needle enter or prick the body of the health care providers when they are performing their duties.(Manzoor, Daud et al. 2010) .Unintentional contact to the blood borne diseases via the needle stick injuries (NIS) in the health care setting is an identical and serious issue among the staff nurses and other health care provider's. About the 90% of nurses are affected through the needle stick injuries due to the lack of information and teaching. (Habib, Khan et al. 2011)

There are various reasons of needle stick injuries but recapping of syringes after using it is assumed as the greatest common reason liable for needle stick injuries. (Aslam, Taj et al. 2010). 71% nurses are not reported about their needle stick injuries. The main reason for it is that the nurses have not proper knowledge about it and also about the importance of reporting of NSIs(Honda, Honda et al. 2011)

The main reasons for the spread of blood borne diseases are insecure and unnecessary injections (Enwere and Diwe 2014). Needle stick injuries is the major and main cause of blood borne infections which is caused by needle piercing. (Yamazhan, Durusoy et al. 2011). The nurses and other health care workers have Hazard/danger which is

influenced by the ratio of patients and the information which the health care provider have and the most important point is how much they use their protective methods when they attend the patients.(Marković-Denić, Oštrić et al. 2012)

Literature Review:

A study which was conducted by Kebede Bidira, Mirkuzie Woldie and Gugsu Nemera in public hospitals of jimma Zone, South West Ethiopia, showed that lack of awareness among nurses is a major cause of happenings of needle stick injuries. The education is very important regarding it because due to lack of knowledge they are suffering from blood borne diseases. (Bidira, Woldie et al. 2014)

This study was conducted in Kenya from October-November in 2010, in which author concluded that to save the nurses or other health care providers from the risks of blood borne diseases, proper education and polices are needed in health departments. The affected persons are mentally and physically disturbed and they cannot perform their duties effectively. (Mbaisi, Wanzala et al. 2013)

A study was conducted by Dr. Bolarinwa Oladimeji Akeem, Dr Asowande Abimbola done in Ilorin, Nigeria that needle stick

injuries cause blood borne diseases like Hepatitis C virus, Hepatitis B virus and HIV/AIDS. It's very important that after administering injection we should dispose of syringes properly in safety box. Wearing gloves is also important for it.(Akeem, Abimbola et al. 2011)

A study conducted by Adejumo P.O. and Dada F.A at university college hospital (UCH) Adeoyo maternity hospital (AMTH) described that most of the nurses do not attend the meetings or conferences in which teaching or instructions are given regarding injection safety. Educational programs and workshops are most important for awareness. The nurses should be educated how can they protect their self through the safe administration of injection.(Adejumo and Dada 2013)

A study conducted by Lekhraj Rampal, Rosidah Zakria and Azher Md Din done in Sardang Malaysian Hospital showed that most of the nurses do not have proper knowledge about the prevention of needle stick injuries .The factors which becomes a risk for needle stick injury is the high ratio of patient.(Rampal, Zakaria et al. 2010)

A study was conducted by Sarwarna Madhu Kumar and Ramesh G the study done in a medical college rural hospital Bangalore.

They described that our safety is very important when we give services to the patients. The recommendations are that proper training must be given to their health employers regarding the prevention of needle stick injuries.(Madhukumar and Ramesh 2012)

A study conducted by MZA Hamid, NA Aziz and AR Anita in a tertiary care hospital of Malaysia says that there are many reasons of needle stick injuries especially when we give care to the patient, medicine and any other surgical procedure. The needle and any other instrument comprising of bloody fluid when prick our skin, the infected blood enters in our body and causes blood borne diseases.(Hamid, Aziz et al. 2010)

A study was conducted by Kelemua Guliat and Gebeyaw Tiruneh in health institution Bahir Dar city administration in 2012 .The author described that our awareness and boldness is nothing unless we are not perfect in our work or practice. Practice is very important for precaution because practice makes a man perfect. For this purpose proper seminars and teachings are needed for the training of health care provider.(Gulilat and Tiruneh 2014)

A study was carried out by the Anjum Hashmi, Lisa indah from 1st January to 30

June 2012 in Najran, Saudi Arabia in which the author explained that nurses or other health care workers are more affected by needle stick injury who are working in emergency, operation theater, and the area where the patients are kept for observation. Needle stick injury is the main cause of spread of fatal diseases specially HIV/AIDS.(Hashmi, Al Reesh et al. 2012)

A study was done by Ahmed Shah Salehi and Paul Garner in Kabul to access the occupational injury history and universal precaution. The study reveals that it's not enough that strategies are made for the prevention of sharp injuries, their appliance is also very necessary. (Salehi and Garner 2010)

A study conducted by Alok Sharma, Varsha Sharma and sawati Sharma in Jaipur, India, the study published in 2013 showed that strategies for waste management is not enough their proper handling is also very important. It is the responsibility of stake holders of health institution that they make strategies for the proper waste management and must check that the employers are using the preventive methods or not.(Sharma, Sharma et al. 2013)

A study carried by Rekha Sachan and Anuradha Nischal in tertiary health care

center in India describes that proper waste management is very important. It is possible by the training and meetings with nurses, doctors and waste collectors.(Sachan, Patel et al. 2012)

A study conducted by Mohammad Aslam Ansari and Vinita Dayar to access the risk of infection in the western development region, Nepal showed that education regarding needle stick injury is very important along with proper practice and facilities for discarding used syringes and instruments. (Timilshina, Ansari et al. 2010)

A study conducted by Asad Ali Khan, Afridi Ameet Kumar and Raza Sayani to access the needle stick injury risk and preventive factors in tertiary care hospitals in Pakistan describes that health care workers are at high risk of blood borne infections because they are in direct contact with patient and with their bloody fluids. Practices regarding preventive measures are only possible through the meetings and educations.(Afridi, Kumar et al. 2013)

A study conducted in the tertiary care hospitals of Karachi by the Mubashir Aslam, Arif Ali and Tahir Taj from November 2007 to January 2008 describes many ways of transmission of blood borne diseases. Most common way is needle stick injury. The rate

of needle stick injury is high among nurses because they have direct contact with medicine and also with the patient.(Aslam, Taj et al. 2010)

Methodology:

Study design:

A descriptive cross sectional study was conducted to assess the knowledge and practice of the nurses regarding needle stick injury in Allied Hospital Faisalabad

Study area:

Medical wards, ICU and Emergency departments of Allied hospital Faisalabad

Duration of study:

3 Month from January, 2019 to April, 2019.

Data sources:

Google, Google scholar, PUBMED, Books etc.

Study population:

Staff nurses of medical wards, ICU and Emergency in Allied Hospital Faisalabad

Sampling techniques:

Consecutive sampling technique was used

Sample size calculation:

50 staff nurses was taken from the relevant departments of Allied Hospital Faisalabad

Sample recruitment: inclusion and exclusion criteria

Inclusion criteria:

Staff nurses of Emergency, Icu and medical wards that have more than 2 years' experience were included in the study

Exclusion criteria:

Head nurses and all the students of nursing were excluded from the study

Data collection techniques:

Data collection tool:

Structured questionnaire was used as a data collection tool. Questionnaire based on the demographic data, knowledge and practice based questions regarding needle stick injury

Pretest or pilot study:

The questionnaire was pretested on 10% of the sample size and what was done on the population which was out of the study area but have similar characteristics. The results of the pre-test were than analyzed and the necessary modification in the questionnaire was made before actual data collection.

Issues of reliability and validity

Pre-testing was done to measure the validity of my instrument and cronbachs alpha test was used to measure the reliability of my instrument.

Define key terms, concepts and variables

Needle stick injury (NSIs) : Needle stick injury means penetrating stab wound, introducing blood or other potentially hazardous material into the body of healthcare worker, during the performance of their duties, by a hollow bore needle or sharp instruments, including, needles, lancets, scalpels, and contaminated broken glass(Manzoor, Daud et al. 2010)

Keywords: Blood-borne diseases, hepatitis, needle stick injuries, sharps injuries(Adams 2012)

Variables of interest:

Outcome variables:

Knowledge and practice of nurses are the outcome variables.

Study variables:

Study variables were

- Age
- Gender
- Experience of nurses
- Educational status

Data analysis plan:

SPSS version 20

Ethical consideration:

Informed consent was taken for questionnaire filling and information was kept confidential moreover comfortable place is provided to the participants and their privacy is always be maintained at every level.

Results:

Table 1: socio-demographic characteristics of the Participant

Variables	Frequencies (n)	Percentage (n) %
1: Age of the participants		
a. 18-25 years	16	32.0%
b. 26-30 years	30	60.0%
c. 31-40 year	4	8.0%
d. above 40 years	00	00%
2: Gender of the participants		
a. female	50	100.0%
b. male	00	00%
3: Qualification of the participants		
a. general nursing	32	64.0%
b. BSN	12	24.0%
c. Specialization	6	12.0%

4: Designation of the participants a. charge nurse	50	100.0%
5: Ward of participants a. medicine b. emergency c. Icu	18 16 16	36.0% 32.0% 32.0%
6: Experience of participants a. <3 years b. >5 years c. >7 years d. >10 years	33 8 5 4	66.0% 16.0% 10.0% 8.0%
7: Marital status of participants a. Married b. Un married	23 27	46.0% 54.0%
8: Hepatitis b vaccination a. done b. not done	34 16	68.0% 32.0%

Table.1 shows the demographic data of the nurse’s participant. First part contains demographic data of study participants and other two parts containing knowledge and practice based data. In these 16(32%) participants of 18-25 years, 30(60%) participants of 26-30 years while 4(8%) participants of 31-40 years of age group. All participants were female nurses in which 32(64%) were of diploma nursing holder, 12(24%) of BSN nursing and 6(12%) were specialization in nursing. 18(36%) were from

medicine department. 16(32%) were from emergency department and 16(32%) were from icu department.in 50 participant 33(66%) have <3 years of experience, 8(16%) have >5 years’ experience, 5(10%) have >7 years of experience and 4(8%) have >10 years experience.in this study 23(46%) were married and 27(54%) were unmarried.

Table 2: Average of knowledge of the nurses regarding needle stick injury

Variables	Frequencies (n)	Percentage (n%)
1: NSI stand for a. national security institute b. needle stick injury c. non serious injury d. no suicidal injury	5 37 8 00	10.0% 74.0% 16.0% 00%
2: Needle stick injury is a wound a. Superficial b. subcutaneous c. percutaneous d. A and B	2 9 29 10	4.0% 18.0% 58.0% 20.0%
3: Needle stick injury is the risk for transmission of disease a. Hepatitis B and C b. HIV	5 1	10.0% 2.0%

c. None of above	2	4.0%
d. A and B	42	84.0%
4: Which method Increase the risk of needle stick injury		
a. Recapping	38	76.0%
b. Disassembly	2	4.0%
c. Inappropriate method	10	20.0%
5: Bleeding should be encouraged at the site of injury?		
a. Yes	37	74.0%
b. No	5	10.0%
c. Do not know	8	16.0%
6: Which devices reduce the risk of needle stick injury?		
a. Improved Engineering control	31	62.0%
b. Needle cutter	9	18.0%
c. Sharp discarding instruments	10	20.0%
7: Who has a greater chance to get needle stick injury?		
a. Nurses	43	86.0%
b. Doctors	2	4.0%
c. Lab technicians	5	10.0%
8: The infections transmitted from needle stick injuries are		
a. Life threatening	48	96.0%
b. No risk		

	2	4.0%
9: Give two examples in which needle stick accidents may be avoided		
a. Gowns	00	00%
b. Safer devices and techniques	24	48.0%
c. Safer devices and techniques and gloves	24	48.0%
d. Safety goggles	2	4.0%
10: What does the CDC recommended to do after the needle stick injury?		
a. Wash area with soap and water	4	8.0%
b. Report injury to supervisor	2	4.0%
c. Use bleach immediately	42	84.0%
d. Both A and B		
11: Who should you tell if you see needles without a safety device?		
a. Charge nurse	4	8.0%
b. Co-worker	00	00%
c. Supervisor	2	4.0%
d. Safety officer	7	14.0%
e. Both C and D	37	74.0%

12: What is the maximum capacity for a sharp container?	8	16.0%
a. 50%	24	48.0%
b. 75%	8	16.0%
c. 90%	10	20.0%
d. I do not know		
13: After needle stick injury baseline investigation are	47	94.0%
a. Needed	3	6.0%
b. Not needed	00	00%
c. Do not know		
14: Strategies for prevention of needle stick injury		
a. Training of health care providers	35	70.0%
b. Avoiding leaving open syringes	14	28.0%
c. Use gloves	1	2.0%
d. None of above	00	00%

Table: 2. shows the knowledge of the nurses regarding needle stick injury in allied hospital Faisalabad .overall results show insufficient knowledge of the nurses. In this study 74% nurses said that NSI stand for needle stick injury.58% nurses said that needle stick injury is a percutaneous wound while 18% nurses views that it is a

subcutaneous wound .84% nurses give the right answer that needle stick injury is the cause of the hepatitis B, hepatitis C and HIV and 4% said that there is no risk for transmission of disease from needle stick injury.62% nurses said that improved engineering control devices can control the risk of the needle stick injury.in this study 96% nurses said that diseases spreading from needle stick injuries are life threatening while 4% nurses said that there is no risk.94% nurses said that baseline investigations are needed after needle stick injury and 6% says that investigations are not needed.

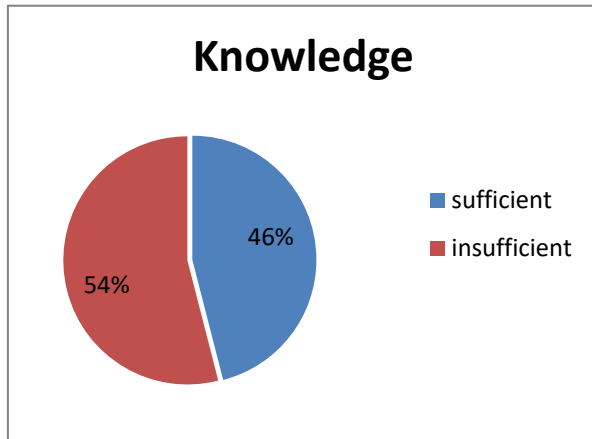
Table 3: Knowledge status

Variables	Frequency
Mean	1.54
Std.Deviation	.503

The given table shows the statistics of knowledge mean and standard deviation in 50 sample size. The mean of knowledge was 1.54 and standard deviation was .503

Table 4: Average of knowledge of participants regarding needle stick injury

Keys	Frequency	Percentage
Sufficient	23	46.0
Insufficient	27	54.0
Total	50	100.00



needle stick injury

Table.4 and figure.1 shows the percentage of the knowledge of the participants. In these participants 23(46%) has the sufficient knowledge and 27(54%) has insufficient knowledge regarding needle stick injury.

Table 5: Practice of participants regarding needle stick injury

Variables	Frequencies (n)	Percentages (n%)
1: Do you throw used needles or sharp into the sharp bin immediately? a. Yes b. No	48 2	96.0% 4.0%
2: Do you recap needle after use? a. Yes b. No	43 7	86.0% 14.0%
3: Do you use gloves when withdrawing a needle or cannula from a patient? a. Yes b. No	38 12	76.0% 24.0%
4: Do you wear gloves when disposing contaminated needles or sharps? a. Yes b. No	39 11	78% 22%
5: Do you separate the needle from the syringe prior to disposal? a. Yes b. No	39 11	78.0% 22.0%
6: Do you use gloves during phlebotomy? a. Yes b. No	39 11	78.0% 22.0%
7: Do you take standardized safety measures to prevent needle stick injury? a. Yes b. No	45 5	90.0% 10.0%

Table5: Practice of the participants. In 50 participants 96% of nurses throw used needles in sharp bin immediately and 4% of nurses do not follow it. 86% of nurses said that they recap the needle after using and 14% of nurses not know about it. 24% of nurses said that they do not use gloves when withdrawing a cannula or a needle from a patient while 76% of nurses wearing gloves before this procedure. In this study 78% nurses stated that they wearing gloves before disposing the contaminated needles or sharps and 22% nurses do not wearing gloves before disposing contaminated needles or sharps.22% of nurses said that they not use gloves during phlebotomy and 78% nurses using gloves before this procedure.

Practice status:

Table 6: Statistics of the practice

Table 6: Shows the statistics of practice of mean and standard deviation in 50 sample size. The mean of practice was 1.64 and Std.Deviation was .485

Table 7: Average of practice of the participants regarding needle stick injury

Keys	Frequenc y	Percent
Good	18	36.0
Poor	32	64.0
Total	50	100.0

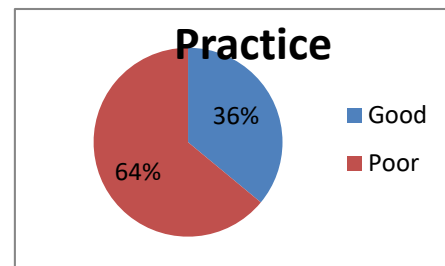


Figure 2

Figure 2: practice of nurses regarding needle stick injury

Table.7 and figure.2 shows the percentage of the

Variables	Frequency
Mean	1.64
Std.Deviation	.485

practice of the participants. In these participants18 (36%) has good practice while 32(64%) has poor practice

Discussion:

The current study conducted on staff nurses in Allied Hospital stick injury. The main contributing factors in this study which causes needle stick injury are recapping of needles 38(76%), lack of improved engineering control devices 31(62%). Another study conducted in tertiary care rural hospital in 2012 revealed that practice of recapping the needles was high (67%) which are one of the important risk factor for needle stick injury and lack of adequate needle cutters are also a big problem. (Radha 2012)

The present study shows that needle stick injuries occur when we are not following the recommended procedures. 62% nurses views that we can reduce the risk of needle stick injury by improved engineering control devices. Recapping procedure 76% increase the risk of needle stick injury. In other study which was done in the teaching hospital of Nigeria explained that while recapping needle 42.3% and during disposing off syringes 23% injuries occur. Overall 87.6% respondents are affected through needle stick injury. (Adejumo and Olatunji 2014)

In present study the author describes that health care provider are at risk. 32% nurses do not get hepatitis B vaccination. Nurses separating the needle from the syringe prior to disposal are 78%, recapping of needle after

use is 86%. Both these procedures increase the risk of needle stick injury. Another study which was done in Tehran in 2009 briefed that separating of needle from the syringes before disposal and recapping of needles after use is a dangerous practice which results in needle stick injury. (Shiva, Sanaei et al. 2011)

In the present study only 68% nurses received hepatitis B vaccination as precautionary measures. In this study it is shown that there are 84% chances for Hepatitis B, C and HIV after NSI. Another study which was done against HIV infection among health care providers in a tertiary care hospital in Nigeria revealed poor attitude of health care providers regarding post exposure prophylaxis they do not get treatment after being potentially exposed to HIV. (Owolabi, Alabi et al. 2012)

In this study it was shown. 62% risk of needle stick injury can be reduced by advanced engineering control devices. 24% nurses do not use gloves. Another study which was done regarding needle stick injury in France, Italy, Spain, Germany and in the united kingdom and united states stated that needle stick injury create impacts on psychological well-being. 60% of nurses reported enhanced fear of needles, 42% reported stressed and

depressed feelings.(Saia, Hofmann et al. 2010)

In current study knowledge of the nurses was 46% that is insufficient and the practice is 36% that was poor. Another study which was conducted in Karachi showed that only 74% participants know about the precaution of NSI. Training is very important for health care providers than personal skills and work experience.(Malik, Shaukat et al. 2012)

The current study showed that 86% nurses recap the needle after use and 78% separate the needle from the syringe prior to disposal that are the risk for needle stick injury. Only 76% nurses uses gloves when injecting a medication to the patient or withdrawing a sample. In another study at a tertiary care hospital, the author says that the nurses have more knowledge than the doctors because they follow the guidelines and protocols during their clinical work. 52.8% injuries occur during the medication and sampling procedures. 25% injuries occur as a result of recapping the needles.(Afia, Naveen et al. 2008)

The present study shows that the nurses have 84% knowledge about the diseases which are caused by infected needle stick injury. The nurses have 86% chances to get the needle stick injury. The other study which was

conducted in teaching hospital of Karachi revealed that the transmission rates of HBV is 30%, HCV is 3% and HIV is 0.3% respectively from needle stick injury. (Saleem, Khalid et al. 2010)

The present study the nurses have 86% chances to get needle stick injury because they have more interaction with the patient. 6% of nurses assume that investigations are not needed after needle stick injury. Another study which was done in tertiary care hospitals of Karachi the authors explained that needle stick injury is the main cause of the transmission of blood borne diseases like hepatitis B, hepatitis C, HIV.(Aslam, Taj et al. 2010)

The present study shows that needle stick injury causes various blood borne diseases. 68% nurses get immunization against hepatitis B virus, while 32% nurses do not vaccinated against hepatitis B virus. 76% nurses say that recapping increase the risk of needle stick injury. A study which was done in India among health care workers concluded that major causes for needle stick injury are high risk activities with low safety measures(drawing blood, recapping needle, transferring blood or bloody fluids from syringe to specimen container). NSI occur while recapping a needle 61%, by blood

collection procedure 26%, 9% injuries occur during surgery procedure. (Anupriya and Manivelan 2015)

The present study shows that 84% nurses have knowledge that needle stick injury is the risk for the transmission of various blood borne diseases. In this study 86% nurses recap needle after use, 76% nurses uses gloves. In other study which was done in the tertiary care center in India revealed that 48% injuries occurred after use but before disposal of the needles. 38% NSI occurred during needle use.(Pathak, Kahlon et al. 2012)

In the present study 62% nurses says that improved engineering control devices can reduce the risk of needle stick injury. 96% nurses says that infection transmitted through needle stick injury are life threatening. 84% nurses say that needle stick injury is the risk for the transmission of blood borne disease. A study conducted in the western development region revealed that due to the limited availability of basic supplies and infection control material the rate of infections is high.(Timilshina, Ansari et al. 2011)

Conclusion:

The current study conducted in Allied Hospital Faisalabad which emphasized the

nurse's perspective to understand their knowledge and practice regarding needle stick injury. The results of the current study showed that the nurses have deficit knowledge and practice regarding needle stick injury. 46% nurses showed sufficient knowledge and remaining 54% have insufficient knowledge. Nurses showed good practice were 36% and 64% with poor practice regarding needle stick injury. Lack of motivation to learn about needle stick injury is also a major problem. Nurses had no proper knowledge about the protective measures of needle stick injury. Overall they had insufficient knowledge regarding needle stick injury and its management. They also showed poor practice and did not use appropriate techniques and protective measures that were the main source of infection transmission. Poor practice and insufficient knowledge leads to severe infections and also cause blood borne diseases.

Recommendation:

Insufficient knowledge and poor practice was observed in the current study so need to improve the knowledge and enhance practice is required for the prevention of needle stick injury.

- Improved engineering control devices are also needed.
- Seminars should be conducted regarding the prevention of needle stick injury.
- Enhance the education level of nurses by replacing previous curriculum with new ones.
- Training centers must be established which is the best option for learning and enhance their knowledge and practices.
- Awareness regarding protective measures is also necessary to prevent infection transmission is much more important.
- Proper system of supervision of the nurse's skills must be maintained.
- Try to eliminate the hazards and the barriers in the work place.
- Physically and mentally comfortable environment should be provided to the nurses.
- Increase the interest of the nurses to learn and to improve their knowledge and practices.
- By the use of protective measures the rate of the diseases can be controlled.

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