

KNOWLEDGE OF CROSS INFECTION CONTROL PROCEDURES AMONG DENTAL STUDENTS

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Abstract:

Aim: To evaluate the knowledge regarding cross infection control procedures among dental students.

Materials and Methods: A descriptive cross sectional study was done with students in the third year, final year and internship who are working in the clinics in Saveetha Dental College regarding their knowledge on cross infections and its prevention. The survey consisted of a self-administered questionnaire which involved questions based on cross infections, sterilisation and disinfection techniques as well as their knowledge on autoclave. The questionnaire comprises of 15 questions. Questions were regarding cross infections, sterilization techniques, needle stick injuries and students' knowledge on autoclave.

Objective: To raise awareness about the various cross infection control procedures that must be taken in dentistry. It is important for a dentist to have thorough knowledge regarding cross infection and its effect in order to take necessary steps to prevent it.

Keywords: awareness, cross infection, control, dental students, infections

Introduction

Cross infection is the invasion or transfer of harmful microorganisms in body tissues that cause infections or diseases(1). The spread or transfer can be from person to person or within the body itself. Common microorganisms include bacteria, parasites, viruses and fungi. Infections can spread in any type of surroundings.(2) The transfer of infections can take place by blood, saliva, indirect or direct contact, aerosols, contaminated instruments or equipment.(1, 3) Another major cause for the cause of spread of infection is that people and doctors are not aware of the risks of infections and so most hospitals lack any sort of infection control programme and will also lack properly trained doctors(1).

Infection can be determined when factors such as viral or bacteriological diseases are present. Besides, sufficient amount of causative microorganisms can be able to cause an infection if the individual has no prior vaccination or immunity towards the pathogen (4, 5). With an absence of immunity, the microorganisms can easily pass through the cell membranes of the host and enters the cell causing an exposure(6). In order to protect the host from getting exposed to infections, effective strategies can be planned and carried out to break the chain of the infectious microorganism and establish safety.

One of the main places where people should be concerned with the spread of infection would include hospitals(7). A place where people with illness or any sort of disease come to, is obviously a place where many harmful microorganisms can grow or spread. Spreading of diseases can be really easy in areas like this if precautions are not taken. It is important that doctors and patients take proper precaution methods in order to limit the effect of these dangerous conditions(1).

Risks of getting infections are greater while undergoing medical procedures, but it can also happen inside the body. In many cases, infections spread from one part of the body to another. Example: respiratory infections spreading to the ears

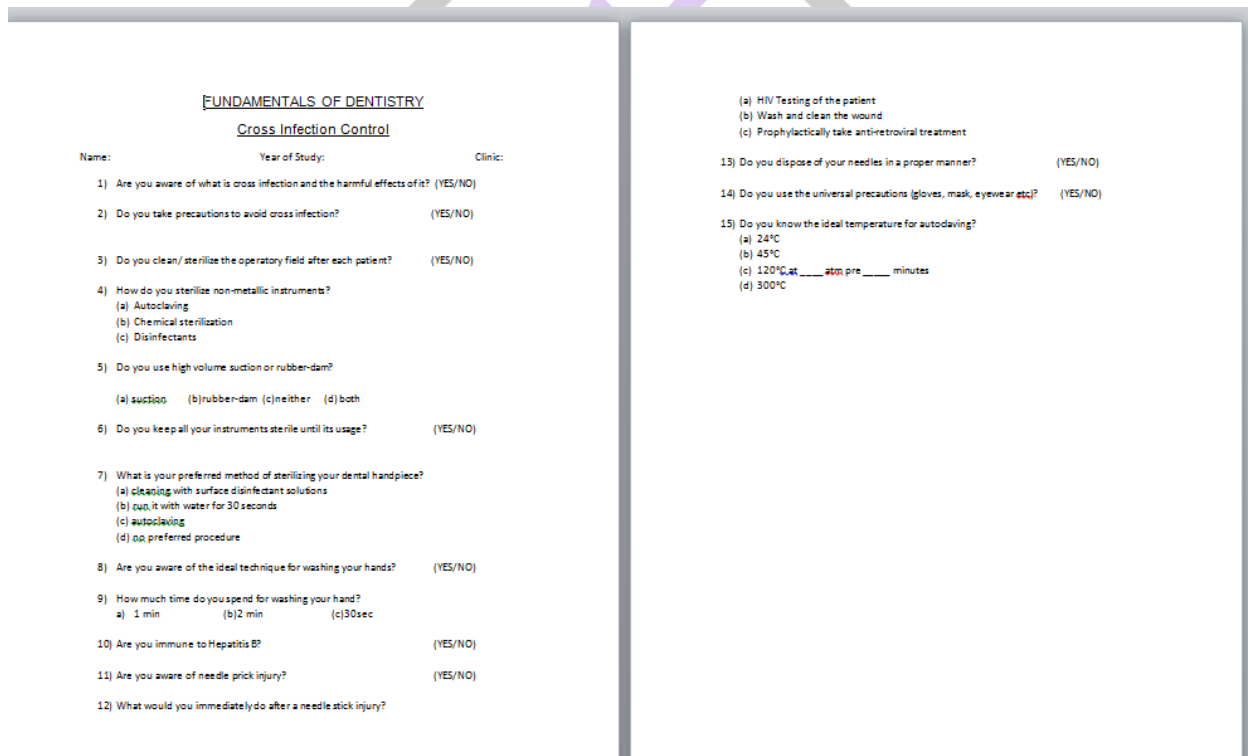
General methods of prevention in a medical set up would include wearing gloves, mask and head cap, changing them after each patient; using ideal hand washing and drying techniques; sterilizing the equipment in using ideal methods; taking vaccinations to get better immunity with proper hygiene(8).

Sterilization of equipments/ instruments are mandatory especially those which are to be used on a patient visiting the hospital or dental centre. Disinfection is done for those equipments that do not come in contact with body fluids. An autoclave is used in laboratories in order to sterilize any equipments prior to usage. It can sterilize solids, liquids, hollows and instruments of various shapes and sizes(6). The ideal temperature and pressure for autoclaving is 121°C and 1Bar(9). These parameters should be watched closely as the ideal temperature and pressure should be reached to ensure complete sterilisation process takes place. Steam autoclave is the most ideal and widely used methods of sterilisation in dental institutions, practices and hospitals as they are both cheap and are able to kill any microorganisms that have contaminated the instrument or dental handpiece used during carrying out treatment for the patient(23).

In a dental office, there are numerous instruments which are to be used by the operator. Whereas most of the equipments require autoclaving, a large number of materials and/or non- metallic instruments cannot be autoclaved and hence require disinfection. This survey aims to determine the knowledge about cross infection among dental students and their knowledge in sterilization/ disinfection protocols.

Materials and method

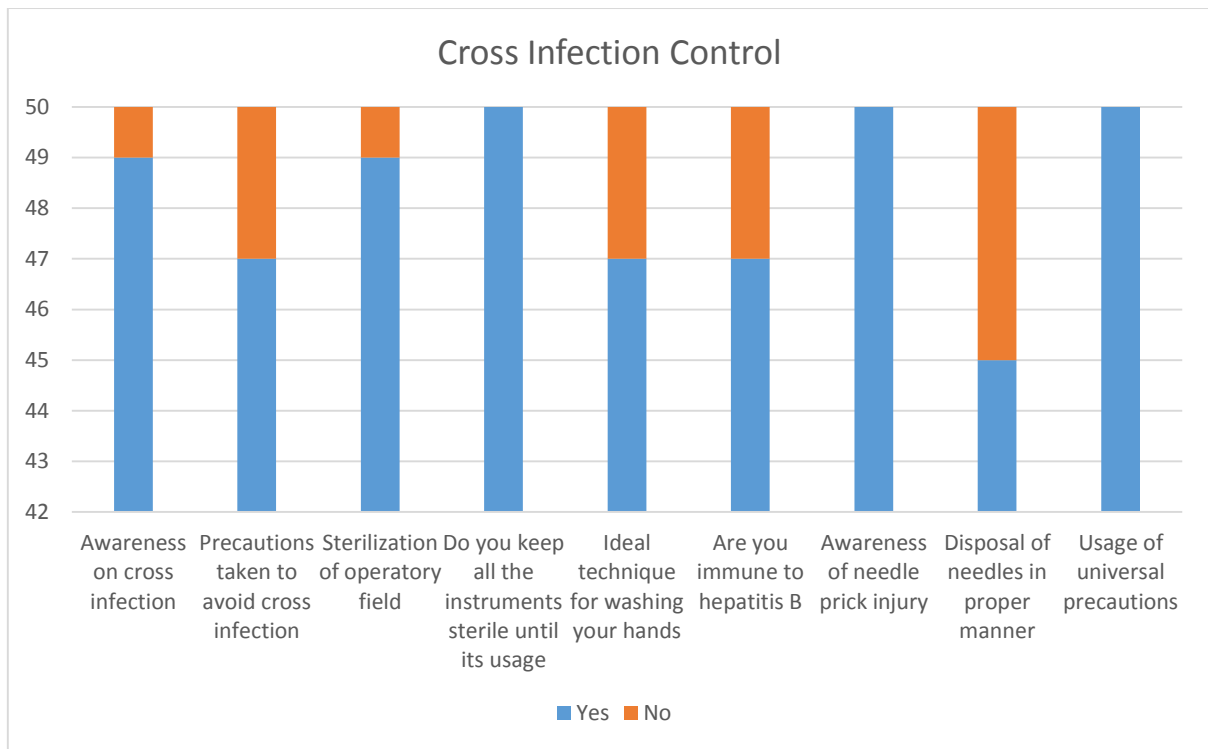
A descriptive cross sectional study was done with students in the third year, final year and internship who are working in the clinics in Saveetha Dental College regarding their knowledge on cross infections and its prevention. The survey consisted of a self- administered questionnaire which involved questions based on cross infections, sterilisation and disinfection techniques as well as their knowledge on autoclave. The questionnaire comprises of 15 questions. Questions were regarding cross infections, sterilization techniques, needle stick injuries and students’ knowledge on autoclave. A sample of the questionnaire is shown in figure.1.



Results

A total of 50 students had participated in this survey. Out of this, 16 were third year students, 18 were final years and 16 were undergoing their internship. The results of the survey are shown in figure.2.

Questions	Yes	No
1. Are you aware of what is cross infection and the harmful effects of it?	49	1
2. Do you take precautions to avoid cross infection?	47	3
3. Do you clean and sterilize after each patient?	49	1
4. Do you keep all your instruments sterile until its usage?	50	0
5. Are you aware of the ideal technique of washing your hand?	47	3
6. Are you immune to Hepatitis B?	47	3
7. Are you aware of needle prick injury?	50	0
8. Do you dispose of your needles in a proper manner?	45	5
9. Do you use the universal precautions (gloves, mask, and eyewear)?	50	0



Are you aware of what is cross infection and the harmful effects of it?

In this survey of 50 people, 98% of the people who answered the survey are aware of the harmful effects of cross infection and what it is.

Do you take precautions to avoid cross infection?

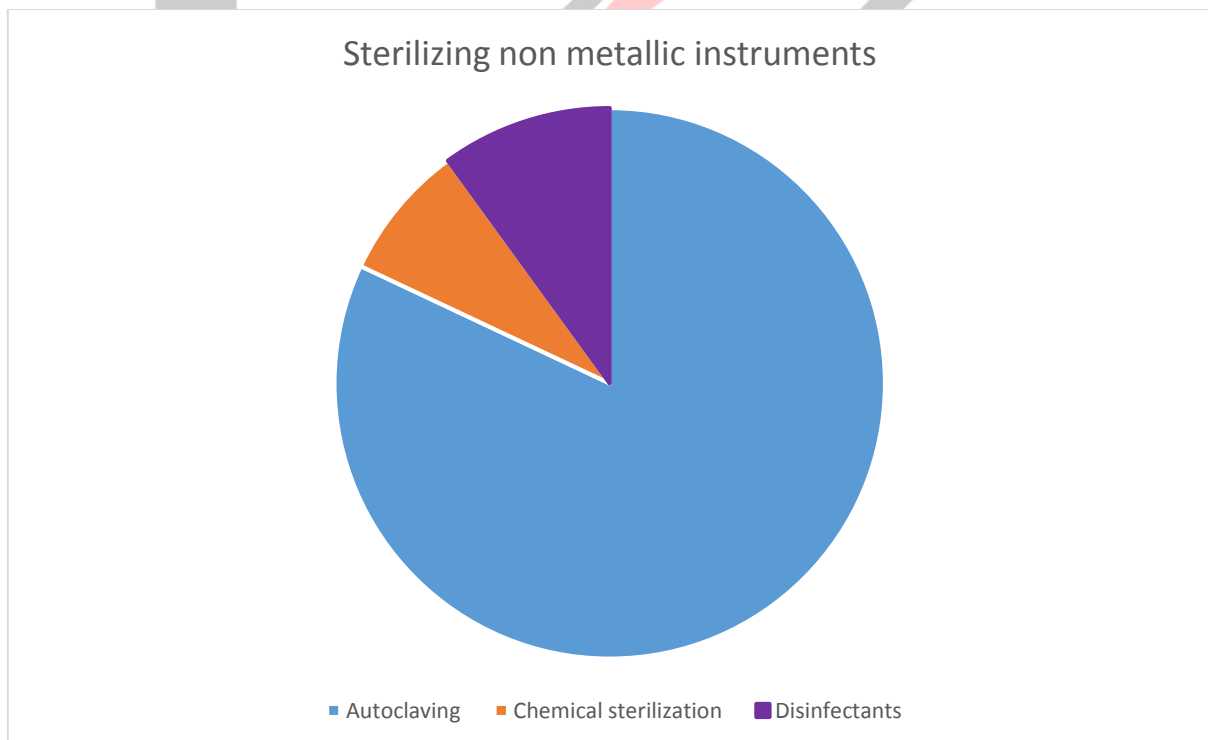
Out of 50 people who took part in the survey, 47 of the students constantly take precautions to avoid cross infections.

Do you clean/ sterilize the operatory field after each patient?

Among the 50 students who participated in the survey, 49 of them clean and sterilize the operating area after every patient.

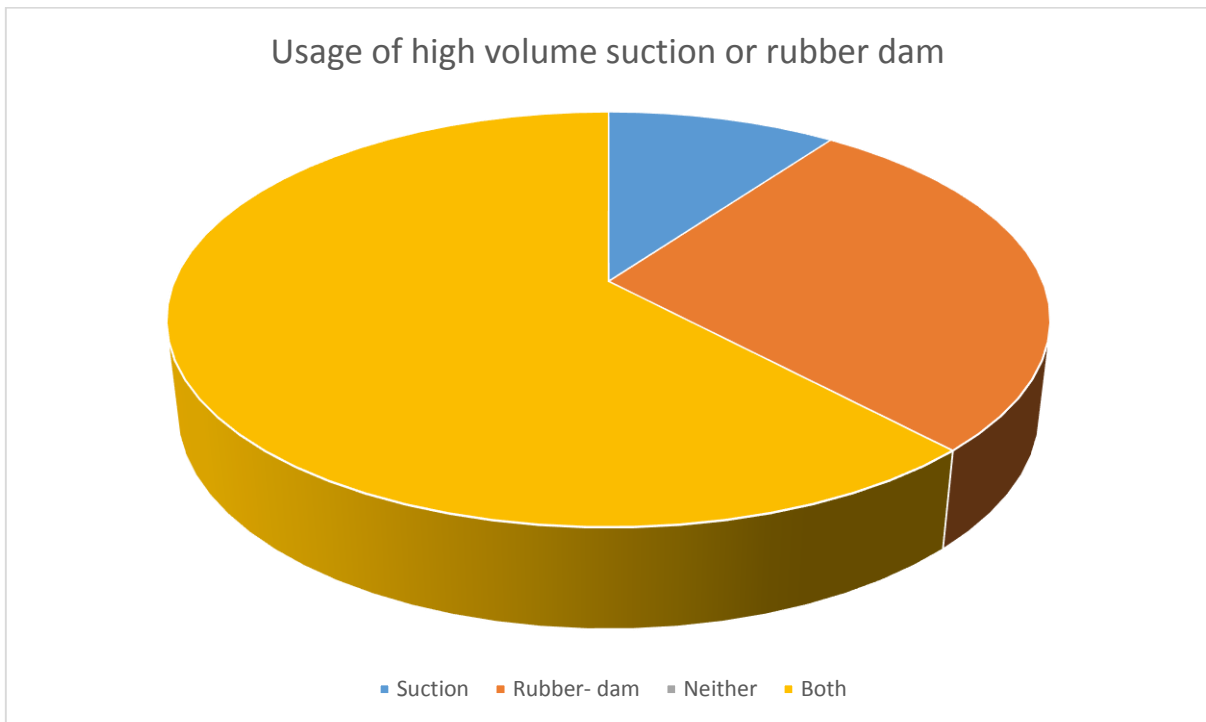
How do you sterilize non- metallic instruments?

In the survey of 50 people, 41 of the students sterilize their instruments by autoclaving them while 5 of them use disinfectants as a sterilization technique and 4 of them use chemicals sterilization for their non- metallic instruments.



Do you use high volume suction or rubber dam?

All 50 students use either a high volume suction or rubber dam during their treatment procedures, 31 students uses both high volume suction and a rubber dam while the other 14 uses rubber dams. 5 other students' uses suction while doing their procedures.

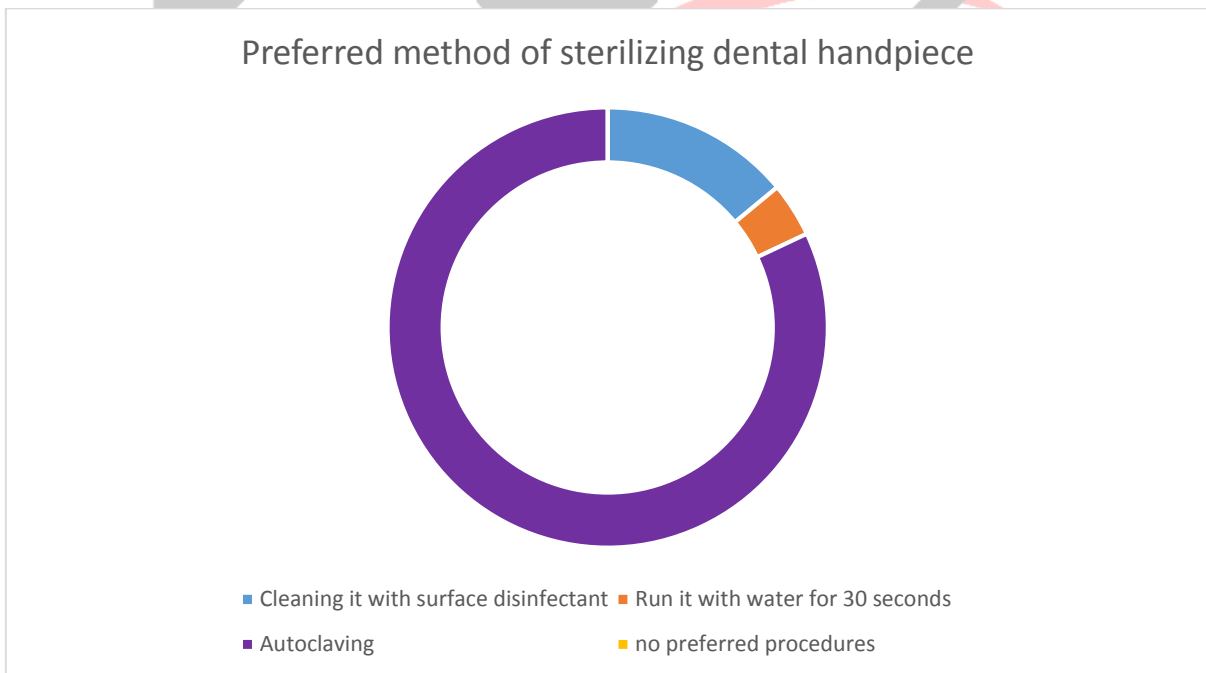


Do you keep all your instruments sterile until its usage?

All 50 of the survey correspondents sterilises their instruments after using it during any procedures carried out on each patient.

What is your preferred method of sterilizing your dental handpiece?

Among 50 students, 41 of them sterilize their handpiece through autoclaving whereas 7 of them cleans it with surface disinfectant solutions. 2 students sterilize their instruments by running it with water for 30 seconds.

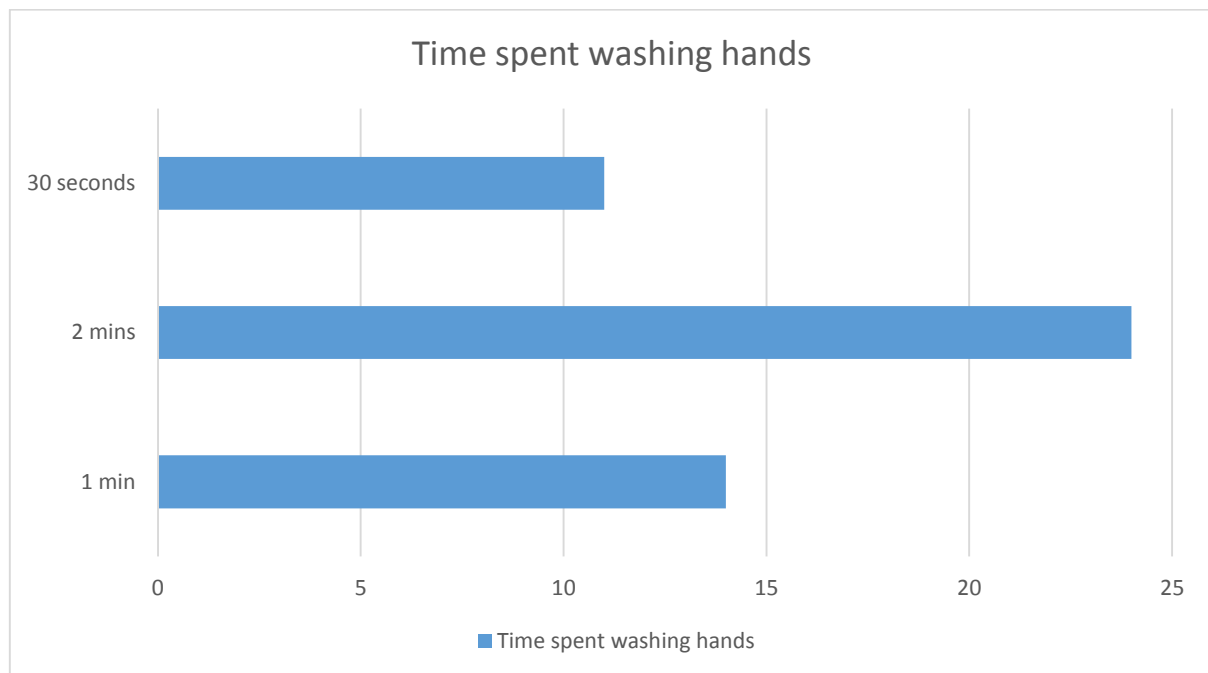


Are you aware of the ideal technique of washing your hand?

47 students are aware of the ideal techniques of washing their hands and they were able to show the proper techniques of washing while 3 of them were unaware of the ideal technique but when asked the ideal time spent for washing their hands, it was a mixed response.

How much time do you spend for washing your hand?

A mix response was obtained when the 50 respondents were asked how much time they spent to wash their hands. 24 of the students said that they spend 2 minutes too wash their hands, 14 of them spend a minute and 11 of them only spend approximately 30 seconds washing their hands.



Are you immune to Hepatitis B?

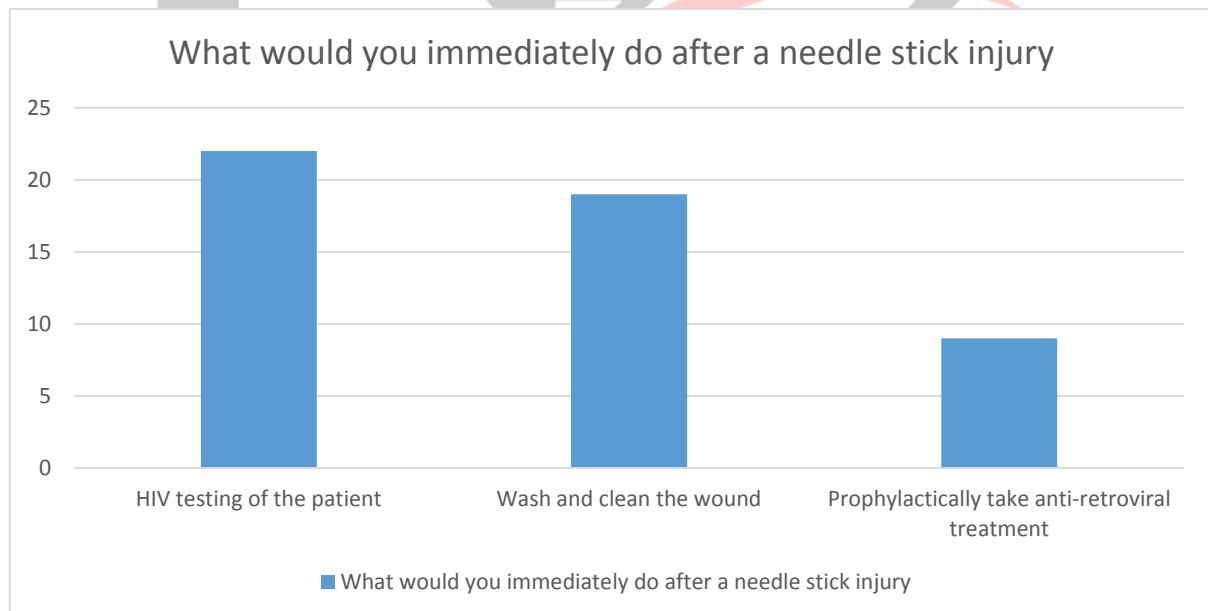
In this survey of 50 people, 47 of the people who answered the survey said that they were immune to Hepatitis B.

Are you aware of needle prick injury?

All 100% of the respondents are aware of needle prick injuries.

What would you immediately do after a needle stick injury?

Out of the 50 people who took part in the survey, 22 of them would do a HIV test on the patient immediately after a needle stick injury, 19 of them would wash and clean the wound as soon as a needle stick injury. 9 students said they would prophylactically take anti- retroviral treatments.



Do you dispose of your needles in a proper manner?

Among the 50 students who participated in the survey, 45 of them dispose their needles in a proper manner while the other 5 do not dispose their needles in the right way

Do you use the universal precautions (gloves, mask, and eyewear)?

All the students who participated in the survey use universal precautions such as gloves, masks and eyewear.

Do you know the ideal temperature for autoclaving?

A mix response was obtained for the ideal temperature for autoclaving, those who knew the right temperature of 120 °C did not really know the right atmospheric pressure and the time needed to autoclave the instruments.

Discussion:

Today there is considerable awareness in the dental profession of the possibility for cross infection occurring in the dental clinics, mainly the clinics in university hospitals(10). The awareness has been heightened by the advent of HIV, hepatitis B virus and other infectious diseases to dental patients as well as the dental students. This study showed a positive attitude regarding vaccination of Hepatitis B, as 47 students are immune to Hepatitis B. Most of the dental institutions keep vaccinations of tetanus, MMR and Hepatitis B as a compulsory component of their admission procedure for dental students and employees as well (11, 12). Surveys have shown that the chances of getting effected by hepatitis B after a needle stick injury from patients with HbsAg (Hepatitis B Surface Antibody) was approximately 20% and with exposure to the HIV was 0.4%.

The purpose of infection control measures is to break the chain by consistently practicing standards protocols which would prevent the transmission of infectious agents between two individuals(13). Nearly all dental institutions believe that isolations and suction prevent transmission of infectious diseases (13).

In this survey of 50 people, 98% of the people who answered the survey are aware of the harmful effects of cross infection and what it is. 47 of them constantly take precautions to avoid cross infections. While only 47 of the students take precautions, 49 of them answered yes to sterilising or cleaning the operatory field after every patient. The methods used to sterilise non-metallic instruments had a mixed response though a majority of them, 82% choose autoclaving as a preferred sterilisation technique for non-metallic instruments while 10% choose disinfectants and 8% choose chemical sterilisation techniques. Sterilisation is the method of disinfecting small objects such as medical and dental instruments while in contact with liquid(14).

The students were asked if they preferred the use of rubber dam or suction, all 50 of the respondents uses one or the other method with 14 choosing rubber dam and 5 using high volume suction(15,16). 31 of the students however, prefers using both high volume suction as well as rubber dam.

100% of the students who participated in the review sterilises their instruments after using it during any procedures carried out on the patients(17). When asked how they preferred to sterilise their dental handpiece, 41 of them sterilize their handpiece through autoclaving whereas 7 of them cleans it with surface disinfectant solutions. 2 students sterilise their instruments by running it with water for 30 seconds.

47 out of 50 students are aware of the ideal techniques of washing their hands(18) and they were able to show the proper techniques of washing while 3 of them were unaware of the ideal technique but when asked the ideal time spent for washing their hands, it was a mixed response.24 of the students said that they spend 2 minutes (19,20) too wash their hands, 14 of them spend a minute and 11 of them only spend approximately 30 seconds washing their hands.

In this survey of 50 people, 47 of the people who answered the survey said that they were immune to Hepatitis B. All 100% of the respondents are aware of needle prick injuries. When asked about what would be done when a needle prick injury is obtained, 44% of the students would do a HIV test on the patient immediately after a needle stick injury, 38% of them would wash and clean the wound as soon as a needle stick injury. 18% students said they would prophylactically take anti- retroviral treatments.

Among the 50 students who participated in the survey, 45 of them disposes their needles in a proper manner while the other 5 do not dispose their needles in the right way. All the students who participated in the survey use universal precautions such as gloves, masks and eyewear.

Personnel are more likely to comply with an infection control program and exposure control plan if they understand its rationale. (21) Clearly written policies, procedures, and guidelines can help ensure consistency, efficiency, and effective coordination of activities.(22) Moreover, the questions employed were sufficiently simple and unambiguous to achieve a reasonable degree of validity on the different variables. In fact previous researchers have found such self- reports to be quite reliable

This attitude can be improved by refreshing and upgrading their knowledge by providing continuous education of universal infection control measures through arranging sessions or lectures for students of each professional year as come in contact with contaminated instruments, needles, handpieces, blood spilled surfaces and others objects on a daily basis(23).

Conclusion:

This study shows the knowledge, attitudes and behaviour of dental students working in the clinics in Saveetha Dental College regarding methods taken to prevent cross infections as well as sterilization of students working in the clinics. The clinical dental student should be provided with appropriate techniques of washing their hands and regularly maintained method of sterilization. Improved compliance with recommended infection control procedures is required for all the dental students participated in the present survey. Continuing education programs and short- time courses about cross- infection and infection control procedures are

suitable to improve the knowledge of dental students. More detailed information regarding autoclaving and precautionary methods that should be done when a needle stick injury is obtained.

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