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RESEARCH ARTICLE

Knowledge of Dental Health Care Workers' about Standard Precautions Guidelines at Health Care Facilities in Hail Region, Saudi Arabia.

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Abstract

OBJECTIVES: To evaluate awareness and knowledge about standard precautions (SPs) guidelines among dental health care workers (DHCWs) and to explore determinants of adequate knowledge among them.

METHODS: A cross sectional survey was carried out between June and September 2014 among DHCWs at health facilities in Hail region, Saudi Arabia.

RESULTS: Out of 420 DHCWs approached for participation, 307 returned valid self-reported questionnaires with a response rate 73.1%. Although most of the participants (86.2%) were aware of the SPs guidelines, their knowledge level was inadequate. Among the overall participants, only 38.4% achieved good knowledge level with significant difference ($p<0.001$) between dentists (51.5%) and dental assistants (23.2%). In the bivariate analysis, the following variables were found to be associated with good knowledge: older age (=>40 years), longer experience (>10 years), dentist job, working in public sector, awareness of SPs guidelines, higher perception of institutional commitment with IC requirements and higher compliance with SPs guidelines. The multivariate logistic regression analysis demonstrated that dentist job (OR: 3.25; $p<0.001$), higher perception of institutional commitment with IC requirements (OR: 1.44; $p=0.007$) and exposure to sharps injuries and/or blood and body fluids in the last 12 months (OR: 1.89; $p=0.049$) were independently associated with good knowledge.

CONCLUSIONS: Knowledge of SPs guidelines among DHCWs was inadequate. Training should be systematically evaluated to ensure adequacy and addressing training needs. Special consideration in training should be paid to dental assistants, younger staff, those with shorter practice and staff working in private sector.

Introduction: -

Healthcare-associated infections (HAIs) are a major health concern, despite being largely preventable. The nature of dental health care practice with frequent exposures to blood & body fluids, frequent use of sharp objects, harbored microbes in the mouth and close contact with the patients, pose DHCWs in a higher risk of dangerous infection, including blood-borne pathogens such as hepatitis B, hepatitis C, and HIV and other potentially serious infectious diseases, most of it can produce chronic infection and are often carried by persons unaware of their infection [1].

Standard precautions (SPs) are meant to reduce the risk of transmission of bloodborne and other pathogens from both recognized and unrecognized sources. They are the basic level of infection control (IC) precautions which are to be used, as a minimum, in the care of all patients [2]. The principles of SPs include: hand washing, use of personal protective equipments (PPEs) e.g. gloves, surgical masks, eye protection, management of health care waste, correct handling and disposal of needles and sharps, effective cleaning, decontamination and sterilization of equipments, instruments and environment and use of appropriate disinfectants [3].

Evidence exists that compliance with SPs reduces the risk of infections and protects healthcare practitioners [4,5]. Lack of knowledge has been reported among other factors, such as lack of resources and training opportunities and excessive work load as determinants of noncompliance with SPs [6-8].

It is the responsibility of the institutions to make all staff aware of standards of infection control required in the workplace. All dental staff engaged in any aspect of the care of the patients should receive through training and understand the policies adopted in the practice of prevention of cross-infection and cross-contamination; this training should be updated annually and appropriate record kept [3].

This work was a survey undertaken to evaluate awareness and knowledge about SPs guidelines among dental health care workers (DHCWs) and to explore the determinants of adequate knowledge among them in order to provide useful guide for training programs and safer health care.

Methods: -

Study design and location: -

A cross-sectional study was conducted among DHCWs in Hail Region, located in middle north of Saudi Arabia. Dental health care services in the public sector of the region are organized in 85 dental clinics in primary health care centers, 15 dental clinic in hospitals and one specialized dental center with 31 clinics in different dental specialties, while the private sector encompasses 14 dental polyclinic and 23 dental solo clinics within general medical dispensaries [9].

Participants: -

DHCWs in all dental health care facilities of the region; who have direct daily contact with patients or specimens, were the target population for the study. The total number of registered DHCWs in the region at the time of the survey was 471; of whom 274 were dentists and 197 full time dental assistant [9]. The survey aimed to reach all applicable DHCWs who are available and agreed to participate during the survey period. Those who are on annual vacations, maternity leave and newly employed were excluded.

Data collection Tool: -

An anonymous self-administered pre-coded structured questionnaire was used to assess the knowledge and practice of SPs among the survey participants. The content of which was adapted from the literature on standard precautions guidelines [3]. The final data collection form has four main parts; the first part comprised eight questions on basic characteristics and biographical data (age and gender), assignment, affiliation, duration as a health care worker, previous training in IC and hepatitis B immunization status. This section also included questions on the availability of a written infection control guidelines in his/her work facility, being instructed with these guidelines; his/her experience of exposure to sharp injuries or to blood and body fluids and what about his/her view towards adequacy of the IC training received. The second part contained eight questions which sought to ascertain the level of knowledge and understanding of the concept of SPs, covering the following areas: general concept of SPs; hand hygiene; personal protective equipments (PPEs); dealing with needles and sharps; disinfection and environmental sanitation; sharps injuries and other occupational exposures to blood and body fluids; and transmission of blood borne diseases. Items were in the form of closed-ended questions (true or false, and multiple-choice options). The third part comprised seven questions to reflect the level of compliance with different aspects of standard precautions. The fourth part contained three questions concerned with the perception of institutional commitment with IC requirements: provision of adequate supplies of PPEs; availability of hand-washing facilities with clean running water and hand hygiene products; and providing enough supply of colored bags and sharp containers used for collection of sharps and medical wastes.

A pilot testing for the data collection tool was carried out with a convenience sample of 20 of the study population to ensure clarity, time and ease of administration. Refinement were made on the bases of feedback of the participants. Those who participated in the pre-testing were excluded from the study. Face and content validity of the questionnaire was assessed by four experts in the field of infection control and reliability was assessed by using Cronbach's alpha with value of 0.73.

Questionnaire administration: -

Data collection took place during August-November 2014. Data collection was done by handling the questionnaire to the participants available at the time of the survey (n=420) by a trained coordinator under supervision of the investigators. All personal information was recorded without the respondent's name specified. Participation was voluntary, and respondents' anonymity was maintained.

Statistical analysis: -

Collected data was entered and analyzed using the Statistical Package for the Social Sciences (SPSS) software, version 20.0 (SPSS, Chicago, IL). Descriptive statistics were computed to assess personal and professional characteristics of the participants. For knowledge questions, a scoring system was assigned for the included items: 1, correct response; 0, incorrect and 'do not know' responses. For practice questions (compliance with SPs) and questions related to institutional commitment with IC requirements, a scoring system was assigned for the included items: 1, for "never"; 2, for "rarely"; 3, for "sometimes "and 4 for "always". A scale was created for each domain with points attributed for each question, with maximum score of 8, 28 and 12 points for knowledge, practice and institutional commitment with IC requirements respectively. The higher the score, the greater achievement the participant has for each domain. To confirm whether the participants had good knowledge or compliance; =>75% correct responses were considered adequate. Knowledge of SPs as an outcome variables was analyzed with binary logistic regression. Univariate analysis was done to explore the possible associations with predictor variables. We constructed a backward multivariate logistic regression models to determine significant independent predictors. Results of the logistic regression analysis are presented as odds ratios (ORs) and 95% confidence intervals (CIs). A two-sided p-value for all tests of 0.05 and less was considered as indicating a statistically significant difference.

Ethical considerations: -

The protocol of the study was reviewed and approved by the Regional Bioethics Committee of the General Directorate of Health Affairs, Hail region. A prior permission for the research proposal and data collection tool was taken from the local health authority in Hail region and another permission was taken individually from each health facility participated in the survey. Anonymity and confidentiality of the responses were maintained and voluntary participation and the right to nonparticipation was emphasized.

Results: -

Demographic, professional and work related characteristics: -

A total of 318 questionnaires were returned with initial response rate of 75.7%; 11 were incomplete and excluded from the analysis with 73.1% final response rate.

From the total number of the study participants (n=307), 165 (53.8%) were dentist and 142 (46.2%) were dental assistants. Age of the participants ranged from 20 to 59 years with mean (±SD) 34.87 (±8.67); dental assistants were younger with mean age (±SD) 30.35 (±7.78) compared to dentists 38.76 (±7.44). About sixty percent (58.9%) of dentists had practiced more than 10 years, while dental assistants had less experience with only 17% had practiced more than 10 years. Male female ratio was 3.1among dentists and 0.3 among dental assistants. A total of 189 (61.6%) belonged to public sector, the others 118 (38.4%) were from private sector. Table 1 displays the demographic and basic characteristics of the participants.

Table 2, describes professional, institutional and work related characteristics of the participants. The majority (84.4%) attended training programs in IC control, with significant difference (p=0.002) between dentists (90.3%) and dental assistants (77.5%); and between participants from public (90.5%) compared to private sector (74.6%), (p<0.001). Less than half (47.9%) of the participant described the received training as adequate. The majority (83.6%) reported availability of written IC guidelines in their health facility; 86.3% of them had received instructions about IC guidelines. Most of the participants (88.9%) received Hepatitis B vaccination. About forty percent (42.3%) reported exposures to sharps injuries and/or blood & body fluids in the last 12 months of the survey.

Most of the participants (86.2%; 87.8% for dentists, 84.3% for dental assistants), were aware of SPs guidelines, with no statistically significant difference between the two groups. Participants reported higher compliance with SPs guidelines; the compliance score for a scale composed of seven aspects of compliant behavior with SPs (maximum possible score of 28 points), the mean score (±SD) was 24.86 (±3.40); with median 26 (upper quartile score 27, lower quartile score 23). For assessment of participant's perception of his/her institute commitment with IC requirements, a scale including three aspects of the commitment (with maximum possible score of 12 points), the mean score (±SD) was 10.93 (±1.62); with median 12 (upper quartile score 12, lower quartile score 10).

Knowledge of Standard Precautions: -

For assessment of participant knowledge (Table 3); a knowledge score with a maximum of 8 points, the mean score (±SD) was 4.91 (±1.54), with median 5 (upper quartile score 6, lower quartile score 4). The minimum expected mean (75% of the maximum score) considered to describe good knowledge was 6 points. Only 38.4% of the participants achieved the expected knowledge score. Comparing the two groups: the mean knowledge score among dentists was 5.30 (±1.47), median 6.0 points, compared 4.46 (±1.50), median 5.0 points among dental assistants; with significant statistical difference (p<0.001)

Table 4, presents the percent of correct responses for each knowledge item. ; 79.5% of the participants correctly responded to the general concept of SPs; 77.5% to the statement " hand washing is the single most effective way to prevent the spread of infections "; 73.0% for the statement "wearing gloves eliminates the need for hand washing"; 69.4% for the statement "disinfection kills all organisms"; 67.4% for the statement "hepatitis B virus is more infectious than HIV virus"; 57.7% for the correct response regard the likelihood of transmission of hepatitis C virus in case of injury with contaminated needle; 44.3% correct responses about body fluids which pose a risk for hepatitis B infection (but all staff correctly recognized blood and 75% of them recognized saliva as body fluids potentially infectious for HB viral infection) and only 22.1% correct responses to the statement "to avoid needle stick injuries, needles should be recapped/bent after use".

There was a statistically significant difference in favor of dentists compared to dental assistants for the correct knowledge response to the statements: "wearing gloves eliminates the need for hand washing" (p< 0.001), "disinfection kills all organisms" (p< 0.001) and the statement "hepatitis B virus is more infectious than HIV virus" (p< 0.001). No significant difference between the two groups in knowledge scores of the other remaining five items.

Table 5, explores associations between knowledge as dependent variable and potential determinants of good knowledge. Unadjusted univariate logistic regression analysis revealed significant relationship of good participant's knowledge with some demographic, professional and institutional factors such as older age group (=> 40 years) (OR: 2.13; 95%CI 1.27-3.56; p=0.004), longer experience (>10 years) (OR: 2.23; 95%CI 1.39-3.58; p< 0.001), dentist job (OR: 3.51; 95%CI 2.14-5.76; p< 0.001), working in public sector (OR: 1.35; 95%CI 1.01-1.80; p= 0.045), awareness of SPs guidelines (OR: 3.08; 95%CI 1.37-6.90; p= 0.006), higher perception of institutional commitment with IC requirements (OR: 1.26; 95%CI 1.06-1.51; p< 0.01) and self-reporting higher compliance with SPs (OR: 1.11; 95%CI 1.02-1.21; p= 0.021). In multivariate logistic regression model, adjusting for other variables and potential confounders; dentist job (OR: 3.25; 95%CI 1.73-5.76; p< 0.001), perception of higher institutional commitment with IC requirements (OR: 1.44; 95%CI 1.11-1.87; p< 0.01) and exposure to sharps injuries and/or to blood and body fluids in the last 12 months (OR: 1.95; 95%CI 1.08-3.50; p<0.05) were the factors that independently predicted good knowledge about SPs guidelines.

Discussion: -

Most of the participants (86.2%), were aware of the SPs guidelines, 84.4% have received IC training, which is comparable to dental practitioners in some other Gulf countries [10]. Despite the good training coverage reported in this study; participant's knowledge was suboptimal; the mean knowledge score of the participants just attained 61.4% of the maximal score and only 43.8% of them achieved the expected score for good knowledge. Taking into consideration that only 47.9% believed that the training they received was adequate; this highlights the need that provided training should be systematically evaluated for adequacy and addressing training needs. Inadequate knowledge of IC guidelines was also recently reported among other health care workers (HCWs) in hospitals as well as primary health care and educational institutions [7, 11-14]. A fundamental requirement of effective infection prevention and control practices is an educated workforce. Education and training are considered as an important personal health elements of an IC program [3]. Training programs help to build cognitive, affective and behavioral abilities of the staff and improve the service provided by them [1,8,15-16].

The lower percent of correct responses as regard the rule that "needles should not be recapped, bent after use"; this might reflect the current situation in dental practices, as seen in other dental settings [17-18] rather than knowledge of the guidelines. Recapping of a needle increases the risk of unintentional needlestick injuries. Used needles should never be recapped or otherwise manipulated by using both hands, or any other technique that involves directing the point of a needle toward any part of the body. For procedures involving multiple injections with a single needle, the practitioner should recap the needle between injections by using a one-handed technique or use a device with a needle-resheathing mechanism [3]. Training programs and supportive supervision should emphasize the rule of never recapping used needles; the limited situations where recapping is allowed; and the sound technique of needles recapping when needed.

Our study showed better knowledge among DHCWs in public sector compared to private one; a finding also reported in other studies [19-20]; this could be attributed to in part to the significant more training opportunities reported by dental staff affiliated to public health care settings (90.5%) compared to private one (74.6%). The prevalent pattern of dental practice in private sector is in solo clinics, which gives less chance to be in contact with other colleagues who are an important source of professional information [21].

Dentists were more knowledgeable in our study than assistants, which not only may be logically explained by the different education level; but also could be potentially attributed to the better opportunity of the dentist to receive more training than his assistant, seen in the present study.

Data from the present study revealed that age and years of experience, a two correlated factors, were associated with level of SPs knowledge; knowledge scores were significantly higher among older age (=> 40 years) and longer years of experience (>10 years), which comes in agreement with other studies [20,22-23]. This may be due to their participation in greater number of seminars, conferences and trainings some of which may be infection control. Therefore, it is necessary to establish IC training programs targeting newly graduated dental practitioners.

Institutional commitment with IC requirements was independently associated with adequate knowledge of SPs guidelines. DHCWs in our study who perceived a higher commitment of their institutions with the IC requirements; expressed better knowledge than others who perceived less commitment. This implies that the highly committed institutions that ensure resources, also provide better training and supportive supervision.

Our data supports the findings of other studies highlighting the impact of knowledge on the compliant behavior with SPs guidelines [7-8, 24-25]; DHCWs who possessed better knowledge of SPs guidelines in our study, also shown better compliance.

Exposure to sharps injuries and/or exposure to blood and body fluids was independently associated with better knowledge among staff affected. Such association was reported in other studies [26]. This apparent contradiction may be due to reverse causation. The devastating experience of having such experience make the affected person tend to look for more knowledge. The exposed person needs investigations, and if necessary postexposure prophylaxis and follow up. The psychological impact can be high for both the injured person or his family; those who experience needlestick injuries can suffer persistent and substantial psychiatric illness or depression [27].

Table 1 - Demographic characteristic and work settings among 307 Dentists and Dental Assistants, in Hail region, Saudi Arabia, 2014.

Characteristics	**Total (n = 307)**
Assignment n (%)	
• Dentist • Dental assistant	165 (53.7) 142 (46.3)
Gender n (%)	
• Male • Female	160 (52.1) 147 (47.9)
Age in years n (%)	
• <30 • 30-39 • 40-49 • 50+ Mean (SD)	101(32.4) 125 (40.7) 65 (21.2) 16 (5.2) 34.87±8.67
Length of practice in years n (%)	
• < 5 • 5-9 • 10-15 • 16-20 • >20 Mean (SD)	97 (31.9) 87 (28.6) 69 (22.7) 30 (9.9) 21 (6.9) 9.24±6.47
Work setting n (%)	
• Public • Private	189 (61.6) 118 (38.4)

Table 2 - Professional and institutional factors among 307 Dentists and Dental Assistants, in Hail region, Saudi Arabia, 2014.

Characteristics	Total (n = 307) n (%)	Dentists (n = 165) n (%)	Dental assistants (n = 142) n (%)	p-value
Aware of standard precaution guidelines.				
- Yes - No	265 (86.3) 42 (13.7)	145 (87.9) 20 (12.1)	120 (84.5) 22 (15.5)	0.391*
Received any IC training.				
- Yes - No	259 (84.4) 48 (15.6)	149 (90.3) 16 (9.7)	110 (77.5) 32 (22.5)	0.002*
Perceived adequacy of training received				
- Adequate - Inadequate/uncertain	147 (47.9) 160 (52.1)	61 (37.0) 104 (63.0)	50 (58.1) 36 (41.8)	0.001*
Have written IC guidelines in his/her department.				
- Yes - No	251 (82.6) 53 (17.4)	141 (86.0) 23 (14.0)	110 (78.6) 30 (21.4)	0.090*
Have instructed about IC guidelines.				
- Yes - No	258 (86.3) 41 (13.7)	136 (86.1) 22 (13.9)	122 (86.5) 19 (13.5)	0.910*
Received HB vaccination.				
- Yes - No	271 (88.9) 34 (11.1)	147 (89.1) 18 (10.9)	124 (88.6) 16 (11.4)	0.886*
Exposed to sharp injuries or blood & body fluids in the last 12 months.				
- Yes - No	130 (42.3) 177 (57.7)	76 (46.1) 89 (53.9)	54 (38.0) 88 (62.0)	0.1556*
Score of knowledge of SPs guidelines [out of 8] Median (Mean ±SD)	5 (4.91±1.54)	6 (5.30 ±1.47)	5 (4.46 ± 1.50)	<0.001**
Score of compliance with SPs guidelines [out of 28] Median (Mean ±SD)	26 (24.86±3.40)	26 (24.79 ±3.59 26)	25 (24.96 ± 3.18)	0.724**
Score of perceived institutional commitment with IC requirements [out of 12] Median (Mean ±SD)	12 (10.93±1.62)	12 (10.91 ± 1.80)	12 (10.96 ± 1.39)	0.802**

Abbreviations: IC=infection control; SPs= standard precautions; HB= hepatitis B
* Chi Squire Test- Yates corrected;
** Mann-Whitney/Wilcoxon Two-Sample Test (Kruskal-Wallis test for two groups)

Table 3 – Knowledge levels among 307 Dentists and Dental Assistants, in Hail region, Saudi Arabia, 2014.

Assignment	Knowledge score levels			Mean (SD)	Median*; 25-75 Quartiles
	Good (=>75%) n (%)	Fair (50-74%) n (%)	Poor (<50%) n (%)		
Dentist	85 (51.5)	61 (37.0)	19 (11.5)	5.30 (1.47)	6; 4-6
Dental assistant	33 (23.2)	79 (55.6)	30 (21.1)	4.46 (1.50)	5; 4-5
All staff	118 (38.4)	140 (45.6)	49 (16.0)	4.91 (1.54)	5; 4-6

Abbreviations: CI= Confidence interval

* Mann-Whitney test: X^2=24.47, df=1; p<0.001

Table 4 – Percent correct answers of knowledge items included in the knowledge scale among 307 Dentists and Dental Assistants, in Hail region, Saudi Arabia, 2014.

Knowledge item	Correct response	
	n	% (95% CI)
Standard precautions means to deal with blood and body fluids of all patients as if they were infectious with HIV or Hepatitis B or Hepatitis C viruses. (True)	244	79.5 (74.5-83.9)
Hand washing is the single most effective way to prevent the spread of infections. (True)	238	77.5 (72.4-82.1)
Wearing gloves eliminates the need for hand washing. (False)	224	73.0 (67.6-77.9)
Disinfection kills all organisms. (False)	213	69.4 (63.9-74.5)
Hepatitis B virus is more infectious than HIV virus. (True)	207	67.4 (61.9-72.6)
Likelihood of hepatitis C virus transmission after injury with contaminated needle. (Options)	177	57.7 (51.9-63.2)
Body fluids which pose a risk for hepatitis B infection (signing all correct choices) (Options)	136	44.3 (38.7-50.1)
To avoid needlestick injuries, needles should be recapped/bent after use. (False)	86	22.1 (17.7-27.3)

Abbreviations: CI= Confidence interval

Table 5. Logistic regression analysis of demographic, professional and institutional factors associated with good knowledge of standard precautions guidelines among 307 Dentists and Dental Assistants, in Hail region, Saudi Arabia, 2014.

Variables	Knowledgeable#		Univariate OR (95% CI)	Adjusted OR (95% CI)
	Yes n (%)	No n (%)		
Assignment				
- Dentist	85 (51.5)	80 (48.5)	3.51 (2.14-5.76)***	3.25 (1.73-5.76)***
- Dental assistant	33 (23.2)	109 (76.8)	1	1
Gender				
- Male	65 (40.6)	95 (59.4)	1.21 (0.77-1.93)	
- Female	53 (36.1)	94 (63.9)	1	
Age in years				
- < 40	76 (33.6)	150 (66.4)	1	
- =>40	42 (51.9)	39 (48.1)	2.13 (1.27-3.56)**	
Length of practice in years				
- < 10	57 (31.0)	127 (69.0)	1	
- => 10	60 (50.0)	60 (50.0)	2.23 (1.39-3.58)***	
Practice setting				
- Public	78 (41.3)	111 (58.7)	1.35 (1.01-1.80) *	
- Private	40 (33.9)	78 (66.1)	1	
Received IC training.				
- Yes	102 (39.4)	157 (60.6)	1.30 (0.68-2.49)	
- No	16 (33.3)	32 (66.7)	1	
Have a written IC guideline in his department				
- Yes	97 (38.6)	154 (61.4)	1.13 (0.61-2.09)	
- No	19 (35.8)	34 (64.2)	1	
Have received instruction with IC guidelines				
- Yes	102 (39.5)	156 (60.5)	1.41 (0.70-2.9)	
- No	13 (31.7)	28 (68.3)	1	
Aware with SPs guidelines				
- Yes	110 (42.0)	152 (58.0)	3.08 (1.37-6.90)**	
- No	8 (19.0)	34 (81.0)	1	
Received HB vaccination				
- Yes	107 (39.5)	164 (60.5)	1.36 (0.64-2.91)	
- No	11 (32.4)	23 (67.6)	1	
Exposed to sharp injury/blood or body fluids in the last 12 months				
- Yes	57 (43.8)	73 (56.2)	1.49 (0.93-2.36)	1.89 (1.00-3.56)*
- No	61 (34.5)	116 (65.5)	1	1
Score of perceived institutional commitment with IC requirements [out of 12] (mean ±SD)	11.24±1.23	10.73±1.80	1.26 (1.06-1.51)**	1.44 (1.11-1.87)**
Score of compliance with SPs [out of 28] (mean ±SD)	25.53±2.84	24.47±3.80	1.11 (1.02-1.21)*	

Abbreviations: OR= Odds Ratio; CI= Confidence Interval; IC= Infection Control; SPs= Standard Precautions.
#attained 75% or more of the knowledge score, with maximum of 8 points.
* p<0.05; ** p<0.01; *** p<0.001

Limitations: -

Our study might have some limitations. Other than the restricted interpretations of the study results in the cross-sectional design in general; our data collection tool was designed to explore also the knowledge of other HCWs in other practices, so, the basic aspects of SPs were concentrated on; it will be of interest to include aspects of knowledge unique in dental practice in the next survey. Compliance with SPs guidelines in our study was based on self-reporting which is may be a subject of over rating. Exposure to sharps injuries and/or blood and body fluids were measured retrospectively which may be faced with recall bias.

Conclusion: -

The present study revealed inadequate knowledge of DHCWs, especially among dental assistants, younger staff with short experience and DHCWs in the private sector. Training programs should be systematically evaluated for adequacy and adherence to training needs and priority should be given to these vulnerable groups.

Conflict of interests: -

Nothing to declare

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