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Knowledge, Attitude and Practice of Standard Precautions amongst Allied Oral Healthcare Personnel In Lagos State

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Abstract

Background: Allied oral healthcare practitioners such as dental technologists, dental therapists, dental technicians, dental nurses etc., are invariably exposed to patients' blood or/and body fluids and this poses a health risk to oral healthcare workers and patients. This study aimed to assess the knowledge, attitude and practices of standard precautions (SP) amongst allied oral healthcare workers in Lagos State.

Methods: This study was a cross-sectional study which entailed the distribution of structured, self-administered questionnaires to a consecutively recruited convenience sample of 113 allied oral healthcare practitioners in both private and public oral healthcare facilities in Lagos State. Data entry and analysis was done using SPSS. Bivariate analysis was done to determine association between variables. $P < 0.005$ was considered significant.

Results: Most (85%) of respondents displayed good overall knowledge of standard precautions. Majority (77%) of respondents had a positive attitude towards standard precautions. Overall practice of standard precautions amongst the participants in the study was good (92%). However, most (74.3%) of the respondents exhibited moderate correctness in the practice of standard precautions, while few (14.2%) demonstrated a high level of correctness; those with poor level of overall correctness in the practice of standard precautions were the least (11.5%). Factors chiefly associated with low or no compliance with standard precautions were lack/inadequate provision of personal protective equipment (85%), inadequate awareness on need for standard precautions (72.6%), stress associated with compliance (67.3%), and lack of basic amenities e.g. soap, water (64.6%).

Conclusion: The study showed that the knowledge, attitude and practice of standard precautions among allied oral healthcare workers in both private and public healthcare facilities was fair as majority had good knowledge, attitude and practice of standard precautions. However, there is an urgent need to address the issues with reference to the barriers to compliance with standard precautions identified in the study.

Keywords

Allied oral healthcare practitioners, Standard precautions, Infectious diseases

Introduction

In oral healthcare service delivery, the dentist is principally responsible for diagnosing and treating dental patients; allied dental personnel are other members of the team who provide support to the dentist in the administration of oral healthcare [1]. Allied dental professionals include dental technologists, dental technicians, dental therapists, dental nurses, dental hygienists, dental assistants etc [2]. Oftentimes, the dentist delegates certain tasks to the allied dental personnel pertaining to the delivery of oral health

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care [3]. The functions, duties and roles of the allied dental personnel are regulated in accordance with the legislation of the country and/or local regulations where they are found[1]. In most jurisdictions, allied dental personnel perform basic preventive and restorative dental services, thereby allowing dentists concentrate on more complex oral health service delivery [4].

Generally, health care workers are at risk of infection with bloodborne pathogens such as hepatitis B virus, human immunodeficiency virus, and hepatitis C virus etc [5]. Dentistry is a high-risk profession with respect to occupationally-acquired infectious diseases as it mostly involves a surgical field with frequent exposure to blood and body fluids of patients [6]. Dental professionals are particularly predisposed to occupational hazards such as exposure to infections, percutaneous exposure incidents, dental materials, respiratory disorders, eye insults etc [7]. As a result, oral health care workers, through occupational exposure, may have a 10 times greater risk of becoming a chronic hepatitis B carrier than the average citizen [5]. It is therefore pertinent that strict infection prevention and control measures are instituted and adhered to in any dental facility to protect both patients and oral healthcare workers [8].

Standard Precautions are the basic level of infection control precautions which are to be used, as a minimum, in the care of all patients [9]. Standard Precautions are used to prevent transmission of diseases that can be acquired by contact with blood, body fluids, non-intact skin (including rashes), and mucous membranes [10]. They are meant to reduce the risk of transmission of pathogens from dental healthcare personnel to patients; from patients to dental healthcare personnel; and from one dental healthcare personnel to another [11]. Standard Precautions were introduced in 1996 by the Centre for Disease Control (CDC) as a set of infection control measures applicable when contacting all patients [12]. Components of Standard Precautions include the use of protective attire and barrier techniques (Personal Protective Equipment) such as gloves, surgical masks, face shields, aprons and reusable or disposable gowns; handwashing and care of hands; use and care of sharp instruments and needles (including Sharps Injury Management) and; appropriate healthcare waste management [13].

The attitude to, and practice of standard precautions amongst allied dental personnel will stem from their knowledge and understanding of the importance of standard precautions. This study will focus on assessing the knowledge of infection control amongst allied dental personnel, and how the knowledge has influenced their attitude and practice of standard precautions. An assessment of the knowledge, attitude and practice of standard precautions by healthcare workers is a prerequisite for initiating and implementing a successful infection prevention and control strategy in any health facility [14].

Methods

Study location

This study was carried out in various healthcare facilities in Lagos State. Lagos State is one of the thirty-six States in Nigeria located in the Southwestern geopolitical area of the country. Though the smallest state in Nigeria in terms of land mass, Lagos is the most populous city in Nigeria! [15] It is therefore unsurprising to find that Lagos is amongst the States with the highest number of oral healthcare facilities in the country [16]. This is a cross sectional, descriptive study amongst allied oral health personnel in both public and private dental facilities in Lagos State.

Ethical considerations

Approval for the study was sought and obtained from the Department of Research and Ethical Committee, Lagos State University Teaching Hospital (LASUTH), Ikeja, Lagos (LREC. 06/10/1061). Participation in the study was voluntary; participants were informed that they could refuse to enlist in the study. A written informed consent was obtained from respondents.

Sample selection

A convenience sampling technique was used to determine the respondents in this study. Allied oral health practitioners were consecutively recruited from private and public dental clinics in Lagos. The two teaching hospitals in Lagos were used; five private hospitals and five general hospitals were selected conveniently across the five divisions of Lagos state based on the availability of dental clinics in each division.

Those included in the study were allied oral healthcare personnel who had been in practice for at least one year. Those excluded were allied oral healthcare personnel not willing to partake in the study.

Data collection and data collection tool

Data collection in this study was via self-administered questionnaires. This was because allied oral healthcare personnel had attained tertiary education and hence, were expected to be able to read and write, as well as being conversant with the concept of 'standard precautions'. Using Fischer's formula $n = Z^2pq/d^2$, a sample size of 102 was determined. The sample size was increased to 113 to make provision for 10% attrition. The questionnaire was divided into six sections which obtained information on socio-demography; knowledge of standard precautions; attitude to standard precautions; practice of standard precautions; correctness of the practice of standard precautions; and factors associated with low or non-compliance with standard precautions.

Data analysis

The questionnaires were manually checked for errors before entry into the computer. The data was analyzed using Statistical Package for Social Sciences (SPSS) version 21 and Microsoft Excel. The data was presented using frequency tables and charts Tests of significance were performed using a 95% confidence interval, and the level of significance was set at P = 0.005. Bivariate analysis was done to determine associations between variables.

Results

Most respondents were in the age category of 30-39 years (62.8%); married (57.5%); and they were mostly Higher National Diploma holders (79.6%). Majority were dental nurses (46.9%), most respondents were from the Yoruba tribe (85.8%), and a significant number (66.4%) had less than 5 years working experience (Table 1).

All 113 (100.0%) respondents had heard of standard precautions and they all knew that the importance of standard precautions is to prevent the spread of disease. Table 2 shows that most of the respondents knew the diseases that could be spread by not following standard precautions which were hepatitis (83.2%); HIV (69.9%); Tuberculosis (60.2%); Tetanus (54%). Few of the respondents felt that 'Cancer' could be spread by not following standard precautions (23.9%). The respondents displayed a good knowledge of the components of standard precautions to be: use of personal protective equipment (PPE 100.0%), proper disposal of sharps (100.0%) and sterilization of dental instrument (100.0%), hand washing (91.2%), and appropriate waste management (89.4%). Most respondents (96.5%) felt that standard precautions should be employed for 'all patients'.

The major situations that put patients at risk of hospital-acquired infection through health workers were determined to be 'not wearing gloves during patients handling (46.9%)' and 'not wearing gloves during handling of instruments (44.2%)'. The respondents showed good knowledge of the moments when hand washing was most important with an average score of 74.4%. Most respondents submitted that facemasks should be worn mainly when aerosols are generated from dental procedure (92.0%).

Table 3 shows that majority of the respondents agreed (86.7) that standard precautions were essential but majority of the respondents disagreed (61.9%) that precautions should be followed for high risk patients only; instead, standard precautions should be followed for all patients (98.2% respondents). Most of the respondents disagreed (40.7%) that the guidelines for standard precautions were not really clear. Majority of the respondents (49.6%) disagreed that wearing of gloves was more important than using of facemasks in preventing infection and most of the respondents disagreed (50.4%) to feeling uncomfortable reminding a senior colleague to follow standard precautions. Majority of the respondents (68.1%) agreed that there were

Table 1: Socio-demographics characteristics of respondents.

Variable	Frequency (n=113)	Percentage
Age group (Years)		
20-29	29	25.7
30-39	71	62.8
≥ 40	13	11.5
Marital status		
Single	48	42.5
Married	65	57.5
Highest educational level		
Ordinary National Diploma (OND)	17	15.0
Higher National Diploma (HND)	90	79.6
Bachelor of Science (BSc)	4	3.5
Postgraduate (PG)	2	1.8
Job type		
Dental technologist	43	38.1
Dental nurse	53	46.9
Dental therapist	13	11.5
Dental surgical assistant	4	3.5
Religion		
Islam	39	34.5
Christianity	74	65.5
Ethnic group		
Yoruba	97	85.8
Igbo	11	9.7
Others	5	4.4
Length of service (Years)		
≤ 5	75	66.4
> 5	38	33.6
Hospital category		
Public	82	72.6
Private	31	27.4

Table 2: Knowledge of standard precautions.

Variable	Frequency (n = 113)	Percentage
*Disease likely to be contracted by not following SP		
Hepatitis	94	83.2
Tuberculosis	68	60.2
Cancer	27	23.9
Tetanus	61	54.0
HIV/AIDS	79	69.9
*Components of SP		
Use of PPE	113	100.0
Hand washing	103	91.2
Proper disposal of sharps	113	100.0
Appropriate waste management	101	89.4
Sterilization of dental instrument	113	100.0
*When SP should be employed		
Only for suspected high risk patients	44	38.9
For all patients	109	96.5
For no patients	28	24.8
After diagnostic test are run on patients	50	44.2
*Situation that put patients at risk of hospital acquired infection through health worker		
Not wearing gloves during patients handling	53	46.9
Not wearing gloves during handling of instrument	50	44.2
Handshake with relatives	10	8.8
Artificial fingernails	0	0
*Critical moments hand washing is important		
Before touching patients	95	84.1
In between patients	62	54.9
After physical contact with patients	93	82.3
Immediately after a risk of body fluid exposure	96	85.0
After exposure to the immediate surroundings of a patient	88	77.9
Immediately before an aseptic procedure	80	70.8
After inserting an invasive device	75	66.4
*Facemask should be worn for the following reasons		
When patients have bad breath/ halitosis	93	82.3
When aerosols are generated from dental procedure	104	92.0
When it is ascertained that patient has transmittable ID	94	83.2
All times there is contact with patients or its body fluids	97	85.8

SP = Standard precaution; PPE = Personal protective equipment; ID = Infectious disease; *Multiple response

Table 3: Attitude towards standard precaution.

	Agree	Disagree	Indifferent
Standard Precautions are essential	98(86.7)	1(0.9)	14(12.4)
Precautions should be followed for high risk patients only	27(23.9)	70(61.9)	16(14.2)
Standard precautions should be followed for all patients	111(98.2)	2(1.8)	0(0.0)
The guidelines are not really clear	34(30.1)	46(40.7)	33(29.2)
We do not have enough gloves and facemasks	45(39.8)	48(42.5)	20(17.7)
Wearing gloves is more important than using facemasks in infection prevention	48(42.5)	56(49.6)	9(8.0)
I would feel uncomfortable reminding a senior colleague to follow standard precautions	41(36.3)	57(50.4)	15(13.3)
There are not enough hand washing facilities in the clinic	77(68.1)	27(23.9)	9(8.0)
The skin of my hands becomes irritated when I wash my hands	24(21.2)	69(61.1)	20(17.7)

not enough hand washing facilities in the clinic and 61.1% disagreed that the skin of their hands became irritated when they washed their hands.

Table 4 shows that most of the respondents (76.1%) always washed their hands before touching a patient; more than half (51.8)% always washed their hands in-between patients, 84.1% always washed their hands after physical contact with patient, 92.9% of the respondents always washed their hands immediately after a risk of body fluid exposure. Majority of the respondents (85.8%) always washed their hands immediately before an aseptic procedure and 85.8% of the respondents always washed their hands after inserting an invasive device.

Table 4: Practice of standard precautions among respondents.

	Always	Sometimes	Never
Situation respondents wash hand: before touching a patient	86(76.1)	27(23.9)	0(0.0)
Situation respondents wash hand: In-between patients	58(51.8)	23(20.4)	32(28.3)
Situation respondents wash hand: after physical contact with patient	95(84.1)	14(12.4)	4(3.5)
Situation respondents wash hand: Immediately after a risk of body fluid exposure	105(92.9)	8(7.1)	0(0.0)
Situation respondents wash hand: after exposure to the immediate surroundings of a patient	97(85.8)	5(4.4)	11(9.7)
Situation respondents wash hand Immediately before an aseptic procedure	94(83.2)	19(16.8)	0(0.0)
Situation respondents wash hand: after inserting an invasive device	97(85.8)	16(14.2)	0(0.0)
Gloves wearing instances: Before touching a patient	94(83.2)	19(16.8)	0(0.0)
Gloves wearing instances: Before touching hand instruments	81(71.7)	32(28.3)	0(0.0)
Gloves wearing instances: While handling patients' impression	98(86.7)	15(13.3)	0(0.0)
Gloves wearing instances: While performing scaling & polishing	98(86.7)	9(8.0)	6(5.3)
Gloves wearing instances: While handling patients' denture	91(80.5)	22(19.5)	0(0.0)
Facemask wearing instances: When assisting a Dentist working on a patient	90(79.6)	21(18.6)	2(1.8)
Facemask wearing instances: When performing scaling & polishing	97(85.8)	16(14.2)	0(0.0)
Facemask wearing instances: When trimming dentures	93(82.3)	15(13.3)	5(4.4)
Facemask wearing instances: When sterilizing instruments	53(46.9)	48(42.5)	12(10.6)

Table 5: Correctness of practice of standard precautions..

Variable	Frequency (n=113)	Percentage
*How respondents wash hands		
By rubbing hand palm to palm and rinsing in running water	29	25.7
Rubbing hands palm to palm and in-between fingers and rinsing with soapy water in a basin	14	12.4
Rubbing hands palm to palm including in-between finger and fingertips and rinsing with a soapy water in a basin	21	18.6
Rubbing hands palm to palm including in-between finger and fingertips and rinsing under running water	49	43.4
*The order of putting on PPE equipment		
Apron/lab coat→facemask→gloves	83	73.5
Gloves→Apron/lab coat→Facemask	2	1.8
Facemask→Apron/Lab coat→Gloves	28	24.8
*Hand instrument should be disinfected before sterilization		
Always	82	72.6
Sometimes	31	27.4
*When disposing sharps needles should be removed from syringe before disposal		
Yes	97	85.6
No	16	14.2
*When disposing sharps both needles and syringe should be disposed in the sharp box		
Yes	61	54.0
No	52	46.0
*When recapping needles, Single hand technique should be used		
Always	63	55.8
Sometimes	37	32.7
Never	13	11.5
*When recapping needles, double hand technique should be used		
Always	54	47.8
Sometimes	23	20.4
Never	36	31.9

Majority of the respondents (83.2%) always wore gloves before touching a patient; 71.7% before touching instruments; 86.7% while handling patients' impression; 86.7% while performing scaling and polishing; 80.5% while handling patients' denture.

Most (79.6%) of the respondents always wore facemasks when assisting a dentist working on a patient; 85.8% when performing scaling and polishing; 82.3% when trimming dentures and 46.9% when sterilizing instruments.

Table 5 shows that majority (43.4%) of the respondents washed their hands by rubbing hands palm to palm including in-between finger and fingertips and rinsing under running water (43.4%); while most put on their personal protective equipment (PPE) in the order of Apron/lab coat→facemask→

gloves (73.5%). Also, it was seen that 72.6% of the respondents believed that hand instruments should always be disinfected before sterilization. When disposing sharps, 85.6% of the respondents affirmed that the needle should be removed from the syringe before disposal; 54% of the respondents felt that the needles and syringe should be disposed in the sharp box. When recapping needles, 55.8% respondents agreed that the single hand technique should always be used.

Table 6 shows that majority (85.0%) of respondents attested to lack/inadequate provision of personal protective equipment as a factor associated with low or non-compliance with standard precaution, along with lack of basic amenities e.g soap, water (64.6%); stress associated with compliance (67.3%); inadequate awareness of need for standard precaution (72.6%); excessive patients load (54.9%); lack of role model among colleagues (57.5%), and forgetfulness (51.3%).

Table shows that lack or inadequate provision of personal protective equipment (85.0%) is the major factor associated with low or non-compliance with standard precaution.

Table 7 shows that there exists a significant association between the socio-demographic characteristics and the knowledge of standard precautions. The age group (≥ 40) had the highest percentage (100.0%) of good knowledge of standard precautions. Married respondents had slightly better knowledge of standard precaution (86.2%) as compared to single respondents (83.3); respondents who had Bachelor of Science and Postgraduate qualifications (100.0%) had higher knowledge of standard precautions while dental surgical assistants had higher knowledge of standard precautions. Also those with years of experience ≤ 5 had slightly higher knowledge of standard precaution (85.3%) more than those with >5 years of experience (84.2%).

Table 8 shows that there is a significant association between attitude toward precautions and socio-demographic characteristics. It was observed that the middle age group (30-39) positively had the highest percentage (74.5%) of positive attitude towards standard precautions. Married respondents had better attitude towards standard precautions (81.5%) as compared to single respondents (70.8%); respondents who had Bachelor of science and Postgraduate qualifications (100.0%) had a better attitude towards standard precautions while dental surgical assistants had better attitude (100%) to standard precautions than other allied oral healthcare professionals. Respondents with years of experience > 5 years had better attitude to standard precautions (84.2) than those with ≤ 5 years of experience (73.3%).

There is a significant correlation between overall practice of standard precautions and socio-demographic characteristics. Table 9 shows that respondents ≥ 40 had the best (100.0%) overall practice of standard precaution. Married respondents had a better overall practice of standard precaution (96.9%) as compared to single respondents (85.4). Respondents who had a Bachelor of Science and Postgraduate qualifications (100.0%) had better overall practice of standard precautions. Dental surgical assistants had better overall practice of standard precautions (100%) than other job types. Respondents with years of experience > 5 had slightly better overall practice (92.1%) than those with ≤ 5 years of experience (92%).

Discussion

Overall, all respondents (100%) showed knowledge of standard precautions with majority (86.7%) agreeing that standard precautions were essential. This finding is consistent with evidence from other studies [17] but contrasts the findings of low level of knowledge of safety precautions among dental healthcare professionals in Shiraz, Iran [18]. The study found that about 76.1% and 84.1% of participants washed their hands before and after touching a patient, respectively, with about 83.4% putting on their gloves prior to contact with patients. This is encouraging as it shows that oral allied health workers put their knowledge to practice. The level of compliance seen in this study is consistent with other studies where dental practitioners put their knowledge to practice [19]. However, our finding contrasts the finding of low practice of standard precautions in Iran [18] and India [20]. Given the high likelihood of infection transmission in dentistry [5], the finding of high level of knowledge, positive attitude, and practice is encouraging as it showed that allied oral health workers have good knowledge of infection prevention and control.

Beyond the practice of safety precautions, this study explored the correctness of participants' practice. It is one thing to comply with standard precautions, it is another to comply correctly. For example, despite the encouraging level of compliance to hand washing, only about 43.4% practiced hand washing the correct way by rubbing hands palm to palm including in-between finger and fingertips and rinsing under running water. 73.5% of the allied oral health practitioners agree to donning their PPE in the correct sequence (apron - facemasks - gloves). With infection prevention and control, it is important that standard precautions are carried out the

Table 6: Factors associated with low/non-compliance with standard precautions.

Variables	Frequency (n = 113)	Percentage
Factors associated with non-compliant with standard precautions		
Lack/inadequate provision of PPE	96	85.0
Lack of basic amenities	73	64.6
Stress associated with compliance	76	67.3
Inadequate awareness on the need for standard precaution	82	72.6
Excessive patients load	62	54.9
Lack of role model among colleagues	65	57.5
Forgetfulness	58	51.3

Table 7: Association between knowledge of standard precautions and socio-demographic characteristics**.**

	Fair (n = 17)	Good (n = 96)	Total	X^2	p - value
Age group (Years)					
20-29	10(34.5)	19(65.5)	29(100.0)	12.369**	**0.002***
30-39	7(9.9)	64(90.1)	71(100.0)		
≥ 40	0(0.0)	13(100.0)	13(100.0)		
Marital status					
Single	8(16.7)	40(83.3)	48(100.0)	0.172	0.678
Married	9(13.8)	56(86.2)	65(100.0)		
Highest educational level					
OND	1(5.9)	16(94.1)	17(100.0)	2.705**	0.439
HND	16(17.8)	74(82.2)	90(100.0)		
BSC	0(0.0)	4(100.0)	4(100.0)		
PG	0(0.0)	2(100.0)	2(100.0)		
Job type					
Dental technologist	5(11.6)	38(88.4)	43(100.0)	1.708**	0.635
Dental nurse	10(18.9)	43(84.6)	53(100.0)		
Dental therapist	2(15.4)	11(84.6)	13(100.0)		
Dental surgical assistant	0(0.0)	4(100.0)	4(100.0)		
Length of service (Years)					
≤ 5	11(14.7)	64(85.3)	75(100.0)	0.025	0.875
> 5	6(15.8)	32(84.2)	38(100.0)		
Hospital category					
Public	11(13.4)	71(86.6)	82(100.0)	0.621	0.431
Private	6(19.4)	25(80.6)	31(100.0)		

****Fisher exact test**

Table 8: Association between attitude toward standard precautions and socio-demographic characteristics .

	Negative (n = 26)	Positive (n = 87)	Total	X^2	p-value
Age group (Years)					
20-29	7(24.1)	22(75.9)	29(100.0)	1.963**	0.375
30-39	18(25.4)	53(74.5)	71(100.0)		
≥ 40	1(7.7)	12(92.3)	13(100.0)		
Marital status					
Single	14(29.2)	34(70.8)	48(100.0)	1.786	0.181
Married	12(18.5)	53(81.5)	65(100.0)		
Highest educational level					
OND	14(82.4)	3(17.6)	17(100.0)	40.345**	< 0.001*
HND	12(13.3)	78(68.7)	90(100.0)		
BSC	0(0.0)	4(100.0)	4(100.0)		
PG	0(0.0)	2(100.0)	2(100.0)		
Job type					
Dental technologist	10(23.3)	33(76.7)	43(100.0)	1.266**	0.737
Dental nurse	13(24.5)	40(75.5)	53(100.0)		
Dental therapist	3(23.1)	10(76.9)	13(100.0)		
Dental surgical assistant	0(0.0)	4(100.0)	4(100.0)		
Length of service (Years)					
≤ 5	20(26.7)	55(73.3)	75(100.0)	1.684	0.194
>5	6(15.8)	32(84.2)	38(100.0)		
Hospital category					
Public	21(25.6)	61(74.4)	82(100.0)	1.141	0.285
Private	5(16.1)	26(83.9)	31(100.0)		

****Fisher exact test**

Table 9: Association between overall practice of standard practice precautions and socio-demographic characteristics.

	Fair (n = 9)	Good (n = 104)	Total	f	p-value
Age group (Years)					
20-29	6(20.7)	23(79.3)	29(100.0)	8.885**	**0.012***
30-39	3(4.2)	68(95.8)	71(100.0)		
≥ 40	0(0.0)	13(100.0)	13(100.0)		
Marital status					
Single	7(14.6)	41(85.4)	48(100.0)	4.987	**0.026***
Married	2(3.1)	63(96.9)	65(100.0)		
Highest educational level					
OND	1(5.9)	16(94.1)	17(100.0)	0.725	0.867
HND	8(8.9)	82(91.1)	90(100.0)		
BSC	0(0.0)	4(100.0)	4(100.0)		
PG	0(0.0)	4(100.0)	2(100.0)		
Job type					
Dental technologist	5(11.6)	38(88.4)	43(100.0)	1.519	0.678
Dental nurse	3(5.7)	50(94.3)	53(100.0)		
Dental therapist	1(7.7)	12(92.3)	13(100.0)		
Dental surgical assistant	0(0.0)	4(100.0)	4(100.0)		
Length of service (Years)					
≤ 5	6(8.0)	68(92.0)	75(100.0)	0.000	0.984
> 5	3(7.9)	35(92.1)	38(100.0)		
Hospital category					
Public	6(7.3)	76(92.7)	82(100.0)	0.171	0.679
Private	3(9.7)	28(90.3)	31(100.0)		

*significant; **f = fisher exact test.

right way. It is evident that regular trainings should be done on the correct way of undertaking standard precautions.

This study found several factors responsible for low level of compliance with safety precautions amongst allied oral healthcare workers. The most significant factor is lack/ insufficient personal protective equipment (PPE), others are stress associated with compliance, inadequate awareness of need for standard precautions, excessive patient load, lack of role models amongst colleagues, and forgetfulness. Our finding is consistent with similar studies from different populations in which same factors were implicated for poor compliance to standard precautions [21,22]. In addition to some of the factors explored in this study, unsupportive institutional culture has also been identified as a factor for poor compliance to standard precautions by allied oral health workers [21]. Most of these factors stress the need for a more proactive leadership of dental settings in order to achieve sufficient provision of PPE and establish supportive institutional culture with respect to compliance to standard precautions. Availability of PPE has been linked to increased compliance to standard precautions [23].

This study also established significant correlation between socio-demographic characteristics and knowledge, attitude, and practice of standard precautions amongst allied oral health workers. The level of academic qualification, years of dental practice and marital status have been found to have influence knowledge, attitude, and practice of standard precautions of allied dental practitioners. Overall, there is higher level of knowledge, positive attitude, and good practice of standard precautions amongst allied oral health workers who have bachelors or postgraduate degrees, the married, and those with > 5 years experience in the dental field. This could be due to the fact those with longer years of practice have had or seen more cases of infection transmission and were therefore more cautious in preventing a recurrence. In a similar study of infection prevention, health workers with bachelor's degrees and higher were found to be two times more knowledgeable about infection prevention than their counterparts who had less than bachelor's degree [23].

Conclusion

The study showed that the knowledge, attitude and practice of standard precautions among allied oral healthcare workers in both private and public sector, was fair as majority of the health care workers had good knowledge, attitude and practice of standard precautions. However, there is an urgent requirement to address the issues with reference to the barriers to compliance with standard precautions identified in the study.

The findings in this study also buttress the fact that there is a need to restructure training programs to become more practical. Refresher training program for all categories of Healthcare workers should also be mandated. It should become a requirement for all Healthcare workers to attend the training programs at the time of their recruitment and it also should be prioritized in the curriculums of allied oral healthcare specialties. Decisiveness regarding the above will result in heightening the awareness, as well as improve the knowledge, attitude and practices of Standard Precautions amongst allied oral healthcare workers.

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References

1. Brame Jennifer, Mitchell Shannon,Wilder Rebecca et al. (2015) Dental and allied dental students' attitudes towards and perceptions of intraprofessional education. Journal of dental education 79: 616-625.
2. Waldman H, Perlman Steven (2008) Allied dental personnel: Will there be enough? N Y State Dent J 74: 28-30.
3. Hach Maria, Aaberg KB, Lempert Susanne, et al. (2016) Work assignments, delegation of tasks and job satisfaction among Danish dental hygienists. Int J Dent Hyg 15: 229-235.
4. Purbay S, Kumari N, Tanwar AS, et al. (2019) Perception of dental professionals regarding integration of dental auxiliary into dental health delivery system. J Family Med Prim Care 8: 2720-2723.
5. Araujo Marcelo, Andreana Sebastiano (2002) Risk and prevention of transmission of infectious diseases in dentistry. Quintessence Int 33: 376-382.
6. Puttaiah Raghunath, Verma Mahesh, Patil Shankargouda, et al. (2010) The Influence of Infectious Diseases on Dentistry. World Journal of Dentistry 1: 225-231.
7. Ayatollahi J, Ayatollahi F, Ardekani AM, et al. (2012) Occupational hazards to dental staff. Dent Res J 9: 2-7.
8. Peter A Leggat, Ureporn Kedjarune, Derek R Smith (2007) Occupational Health Problems in Modern Dentistry: A Review. Ind Health 45: 611-621.
9. Ojulong J, Mitonga KH, Iipinge SN (2013) Knowledge and attitudes of infection prevention and control among health sciences students at University of Namibia. Afr Health Sci 13: 1071-1078.
10. Murray J, Agreiter I, Orlando L, et al. (2018) BMT Settings, Infection and Infection Control. In: Kenyon M, Babic A, The European blood and marrow transplantation textbook for nurses: Under the Auspices of EBMT. Springer.
11. Volgenant CMC, de Soet JJ (2018) Cross-transmission in the Dental Office: Does This Make You Ill? Curr Oral Health Rep 5: 221-228.
12. Broussard IM, Kahwaji CI (2020) Universal Precautions. StatPearls Publishing, Treasure Island, USA.
13. https://www.cdc.gov/oralhealth/infectioncontrol/summary-infection-prevention-practices/standard-precautions.html
14. Ogoina D, Pondei K, Adetunji B, et al. (2015) Knowledge, attitude and practice of standard precautions of infection control by hospital workers in two tertiary hospitals in Nigeria. J Infect Prev 16: 16-22.
15. AA Rahman, A Barbieri, JC Fotso, et al. (2009) Urban population-environment dynamics in the developing world: Case studies and lessons learned. Committee for International Cooperation in National Research in Demography (CICRED), Paris.
16. Adeniyi Abiola, Sofola Oyinkansol, Kalliecharan Ricky (2012) An appraisal of the oral health system in Nigeria. Int Dent J 62: 292-300.
17. EsamSalehHalboub, Sadeq Ali Al-Maweri, Aisha Ahmed Al-Jamaei, et al. (2015) J Int Oral Health 7: 15-19.
18. Askarian, M, Mirraei, K, Honarvar B, et al. (2005) Knowledge, attitude and practice towards droplet and airborne isolation precautions among dental health care professionals in Shiraz, Iran. J Public Health Dent 65: 43-47.
19. Haridi HK, Al-Ammar AS, Al-Mansour MI (2016) Compliance with infection control standard precautions guidelines: A survey among dental healthcare workers in Hail Region, Saudi Arabia. J Infect Prev 17: 268-276.
20. Singh A, Purohit BM, Bhambal A, et al. (2011) Knowledge, attitudes, and practice regarding infection control measures among dental students in Central India. J Dent Educ 75: 421-427.
21. HamidrezaHedayati, Brahmaputra Marjadi, MehrdadAskarian (2014) Barriers to standard precautions adherence in a dental school in Iran: A qualitative study. AJIC 42: P750-P754.
22. Michael Christian, Emil NamakukaKikwilu (2014) Knowledge, attitude, reported behaviour and perceived challenges to adhering to infection control measures in dental practice among dental practitioners in Tanzania. Tanzania Dental Journal.
23. Desta M, Ayenew T, Sitotaw N, et al. (2018) Knowledge, practice and associated factors of infection prevention among healthcare workers in DebreMarkos referral hospital, Northwest Ethiopia. BMC Health Serv Res.

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