Dentist's Practice of Medication Safety in Saudi Arabia

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ABSTRACT
Objectives: The study aimed to exemplify the dentist's practice of medication safety in the Kingdom of Saudi Arabia. **Methods:** It examines a cross-sectional survey that deliberated the dentist's medication safety practice in Saudi Arabia. It self-reported an electronic survey of dentists, including dentists from internship to consultant, dental specialties in Saudi Arabia. The survey entailed respondents' demographic information about dentists and the implemented medication safety in dental care, the medication's safety items stated in dental care, and dental medications implemented the medication's safety. The 5-point Likert response scale system was used with closed-ended questions. The data analysis of the dentist's knowledge of medication safety is completed through the survey monkey system. The statistical package of social sciences (SPSS), Jeffery's Amazing Statistics Program (JASP), and Microsoft excel sheet version 16 were employed in the study. **Results:** The total number of responding dentists was 242, with the mainstream of them coming from the central region 95 (39.26%) with statistically noteworthy among the areas ($p<0.05$). Of those, 144 (59.75%) were male, while 97 (40.25%) were female, with statistically significant between them ($p<0.05$). The average scores of the executed items for medication safety in dental care were 3.12 with high scores element was adverse drug reactions documentation system (3.26), and the vision of medication safety in dental care was 3.23. The average scores of frequently of the medications safety items reported in dental care was 3.17 with high scores element was pregnancy and lactation altering system (3.88) and patient's education of dental medications (3.60). The highest scores of medication Safety (to authorities) the responsibility of types of healthcare professionals was a pharmacist (4.34) and dentist (4.23). The reliability test includes McDonald's ω (0.980) and Cronbach alpha (0.979). **Conclusion:** The dentist's practice of medication safety was inadequate in Saudi Arabia. Implementation of medication safety in dental care is obligatory to prevent dental mistakes and drug-related problems. Also, the study aimed to improve the patient safety culture among dental practices in Saudi Arabia.
Key words: Dentist, Practice, Medication, Safety, Care, Saudi Arabia.

INTRODUCTION

Medication errors are measured as a latent problem in all healthcare fields, including medical, dentistry, nursing, and pharmacy. Each area had a diverse percentage of medication errors in the practice with an emphasis on dental care. As a result, drug-related problems, comprising medication errors, had likely issues with a high economic burden in Saudi Arabia based on patients and health care providers, comprising dentists.[1,2] Also, various studies deliberated patient safety the dental field.[3-6] Other publications addressed the medication safety elements to stop dental errors, including medications.[7] The studies were highlighted several features, including but restricted to ambiguous writing prescriptions, unapproved indications, and other safety elements. However, numerous investigations discovered the medications causing errors. Medication safety practice during dental care studies is infrequently finding in Saudi Arabia or the Gulf and Arabia countries.[7-11] The current research objective is to state the dentist's practice in medication safety.

METHODS

A cross-sectional analysis discovered the dentist's medication safety practice during dental care in Saudi Arabia. It was an electronic and self-reported survey of dentists. It encompassed all dentists from internship through the consultant and all dentistry specialisms and located in Saudi Arabia. All non-dentists or students and non-completed surveys will be excepted from the study. The survey contained the dentist's demographic information, the implemented medication safety in dental care, frequently of the medications safety items informed in dental care, and dental medications executed the medication's safety and medication safety (to authorities) responsibility of healthcare professionals. The 5-point Likert response scale system and closed-ended questions were used. According to the previous literature with unlimited population size, the sample was calculated as a cross-sectional study, populations percentage 50%, the confidence level 95% with z score of 1.96 and margin of error 5-6.5%, and drop-out rate 10%. As a result, the sample size will equal

251 to 432 with a power of study of 80%.[12-14] The response rate obligatory of calculated sample size at least 60-70% and above.[14,15] The survey was dispersed through social media of WhatsApp to application and telegram groups of various dentists. The reminder message had been sent every 2-3 weeks. The survey was authenticated through the revision of expert reviewers and pilot testing. The reliability test, including Gutmann's λ6, Gutmann's λ2, McDonald's ω, and Cronbach alpha, had been finished with the study. The data analysis of the dentist's practice of medication safety is completed through the survey monkey system. The statistical package of social sciences (SPSS), Jeffery's Amazing Statistics Program (JASP), and Microsoft excel sheet version 16 with description and frequency analysis, good fitness analysis, correlation analysis, and inferential analysis of factors disturb dentist's practice of medication safety. The STROBE (Strengthening the reporting of observational studies in epidemiology statement: guidelines for reporting observational studies) showed the present study's reporting.[16,17]

RESULTS

The total number of responding dentists was 242, with the mainstream of them coming from the central region 95 (39.26%) with statistically significant amongst the areas (p<0.001). Of those, 144 (59.75%) were male, while 97 (40.25%) were female, with statistically noteworthy between them (p<0.001). Most of the responders were in age (24–35) years [214 (88.43%)] with statistically significant between all ages level (p<0.001). Nearly half of the dentists was general practitioner [144 (47.11%)], followed by intern [60 (24.79%)] with the majority of them were holding dental staff jobs [158 (65.29%)] with statistically significant between them (p<0.001). Most dentists had skilled three years and less 179 (74.27%) with almost half of them non-specialized dentists 96 (44.65%) with statistically significant between them (p<0.001). (Table 1 and 2). The average scores of the realized items for medication safety in dental care were 3.12, with high scores element was medications safety. Adverse drug reactions documentation system (3.26) and medication safety vision in dental care was 3.23. In contrast, the lowest score was the annual plan of medication safety in dental care was 3.04, with statistically significant between answers (p<0.05) as explored in Table 3. The average scores of regular medications safety items stated in dental care were 3.17 with high scores element was pregnancy and lactation altering system (3.88) and patients education of dental drugs (3.60). In contrast, the lowest score was the preliminary medications safety course (2.66) with statistically significant between answers (p<0.05) (Table 4). Except, four items, comprising medications errors reporting system, ADR reporting system, drug quality reporting system, looks alike sound like, medications errors disclosure, and medications safety committee for dental care. There is no statistically significant between answers (p>0.05). The average scores of dental drugs had been executed the medication's safety (3.44) with high scores medications were dental pain medications (3.88) and Anesthesia medications (3.86). In contrast, the lowest scores were teething medications (3.09) with statistically significant between answers (p<0.05) (Table 5). However, four types of dental drugs, including medicines for bad breathing, teething medications, muscle relaxant medications, and anxiolytic medications, were statistically significant between answers (p>0.05). The highest scores of medication safety (to authorities), the responsibility of types of healthcare professionals was a pharmacist (4.34) and dentist (4.23). In contrast, the lowest score was nurses (3.50) with statistically significant between answers (p<0.05) (Table 6). The reliability tests included Gutmann's λ2 (0.981), Gutmann's λ6 (0.992), McDonald's ω (0.980), and Cronbach alpha (0.979).

Factors Affecting the Medications Safety Practice in Dental Care

Gender

There is no statistically substantial difference between males and females in the executed features of medication safety in dental care (p>0.05). However, the male [47 (31.97%)] and female [46 (31.29%)] specified of more execution of vision and mission of dental medications safety than female [20 (20.2%)] and [18 (18.37%)], respectively (p<0.05). There is no statistical significance between males and females in the medications safety obligation in dental practice (p>0.05).

Age

There is no statistically significant difference between all years' experiences and all facets of instigated medication safety in dental care (p>0.05). There is no statistically significant difference between all years' experiences and medications safety responsibility in dental care (p>0.05).

Experience

There is no statistically significant alteration between all age levels and all aspects of implemented medication safety in dental care (p>0.05). However, the dentists with less than one-year experiences than 4-6 years' experience more agreed with full application for all patients, drugs, and patients in the following items that comprised vision [31 (29.25%)], mission [32 (30.19%)], strategic plan [30 (28.3%)], policy and procedures [33 (31.43%)], competency [38 (35.85%)], ADR documentation 40 (37.74%), medication errors documentation [36 (33.96%)], drug quality reporting system 33 (31.43%) on dental medications safety services with [3 (9.68%)], [4 (12.12%)], [3 (9.09%)], [3 (9.09%)], [5 (15.15%)], [5 (15.15%)], [5 (15.15%)], [4 (12.12%)], respectively (p<0.05). There is no statistically significant difference between all age levels and medication safety restraint in dental care (p>0.05).

Qualifications

There is no statistically important difference between all qualification levels and all facets of implementing medication safety measures in dental care (p>0.05). Except the

Table 1: Demographic, social information.

Nationality	Response Count	Response Percent	*p*-value (X2)
Central area	95	39.26%	<0.001
North area	20	8.26%	
South area	45	18.60%	
East area	35	14.46%	
West area	47	19.42%	
Answered question	242		
Skipped question	0		
Gender	**Response Count**	**Response Percent**	
Male	144	59.75%	<0.001
Female	97	40.25%	
Answered question	241		
Skipped question	1		
Age	**Response Count**	**Response Percent**	
24–35	214	88.43%	<0.001
36–45	22	9.09%	
46–55	4	1.65%	
> 55	2	0.83%	
Answered question		242	
Skipped question		0	

Table 2: Demographic, social information.			
Dentist Qualifications	**Response Count**	**Response Percent**	***p*-value (X2)**
Intern	60	24.79%	<0.001
Resident	32	13.22%	
General Practitioner	114	47.11%	
Specialist	15	6.20%	
Consultant	21	8.68%	
Answered question	242		
Skipped question	0		
Position Held	**Response Count**	**Response Percent**	
Director of dental unit	47	19.42%	<0.001
Assistant director of dental unit	8	3.31%	
Dental Director	29	11.98%	
Dental staff	158	65.29%	
Answered question	242		
Skipped question	0		
Years of experiences at Dentists career	**Response Count**	**Response Percent**	
< 1	104	43.15%	<0.001
1 – 3	75	31.12%	
4 – 6	32	13.28%	
7 - 9	9	3.73%	
> 9	12	4.98%	
Answered question	241		
Skipped question	1		
Dentist Specialties	**Response Count**	**Response Percent**	
Dental Public Health	10	4.65%	<0.001
Endodontics	14	6.51%	
Oral and Maxillofacial Surgery	11	5.12%	
Oral Medicine and Pathology	3	1.40%	
Oral and Maxillofacial Radiology	0	0.00%	
Orthodontics and Dentofacial Orthopedics	11	5.12%	
Pediatric Dentistry	15	6.98%	
Periodontics	7	3.26%	
Prosthodontics	10	4.65%	
Restorative dentistry	9	4.19%	
Special needs dentistry	1	0.47%	
Non-applicable	22	10.23%	
General practitioner	96	44.65%	
Other (please specify)	6	2.79%	
Answered question	215		
Skipped question	27		

residents agreed with a partial employment of the mission 11 (33.33%), strategic plan 10 (30.3%), quality management of medications safety system in dental care 10 (30.3%), and medications safety competency 12 (36.36%), more than general practitioner 18 (15.65%), 15 (12.8%), 16 (13.79%), 23 (19.83%), respectively. There is no statistically significant difference between all qualification levels and medication safety responsibility in dental care ($p>0.05$).

Position

There is no statistically noteworthy difference between all position levels and all phases of employing medication safety measures in dental care ($p>0.05$). There is no statistically significant difference between all positions and medication safety responsibility in dental care ($p>0.05$). There is no association with no statistically significant difference ($p>0.05$) between all factors like gender, age, years of experiences, academic qualifications, and dental positions, and all facets of medications safety practice and medications safety responsibility.

DISCUSSION

Various factors are distressing dental disease management and medication safety tools. For example, dental care services are accessible to all patients, comprising pediatrics or adults and geriatrics. The dentist faces diverse diseases, containing diabetes militias, hypertension, cardiovascular diseases, infectious diseases, and other routine diseases. The patients might also agonize from numerous problems, including renal or hepatica issues, pregnancy, or lactation. For all those diseases, dentists should be conscious of dental care during those diseases. Also, all earlier diseases were taking medications for any condition with dentists' dental medicines. All these situations want medication safety to evade any drug-related problems, comprising drug interaction, adverse drug reaction, medication errors, medications without clear indications, drug overdose, and indications without medications that might happen with patients. As a result, the present study stated dentists' medication safety practices during their care about the patients. The self-administered authenticated electronic survey was dispersed to the local district with a good number of sample sizes, and the study's power reaches ideal levels. The results displayed that most responders were young dentists with a general practitioner and low experiences, which was expected because most of the population were young and imitated society's reality.

The average score of medication safety tools in dental practice was insufficient with

Table 3: The implementation of Medication safety items in dental care.

Items	It is fully implemented throughout the hospital for all patients, drugs, and staff		It is fully implemented in the hospital for some areas, patients, drugs, and staff		It is partially implemented in hospital for some or all areas, patients, drugs, staff		It was formally discussed and considered, but it was not implemented		No activity had been implemented		Total	Weighted Average	*p*-value
The vision of Medication Safety in dental care	26.89%	64	22.27%	53	21.01%	50	6.30%	15	23.53%	56	238	3.23	< 0.001
Mission of Medication Safety in dental care	25.74%	61	23.63%	56	19.41%	46	8.02%	19	23.21%	55	237	3.21	< 0.001
The strategic plan of Medication Safety in dental care	21.85%	52	23.53%	56	19.75%	47	10.50%	25	24.37%	58	238	3.08	< 0.001
The annual plan of Medication Safety in dental care	26.36%	63	17.57%	42	17.57%	42	10.46%	25	28.03%	67	239	3.04	< 0.001
Policy and procedure of Medication Safety in dental care	23.95%	57	21.01%	50	18.91%	45	7.98%	19	28.15%	67	238	3.05	< 0.001
Medication Safety competency in dental care	25.10%	60	23.01%	55	17.57%	42	7.53%	18	26.78%	64	239	3.12	< 0.001
Medication Safety and quality management in dental care	27.73%	66	20.59%	49	17.23%	41	8.82%	21	25.63%	61	238	3.16	< 0.001
Medications safety and adverse drug reactions documentation system	28.45%	68	23.01%	55	17.57%	42	8.37%	20	22.59%	54	239	3.26	< 0.001
Medications safety and medications errors documentation system	27.31%	65	19.75%	47	17.23%	41	9.24%	22	26.47%	63	238	3.12	< 0.001
Medications safety and drug quality reporting system (OVR of qualified drug)	25.53%	60	19.15%	45	18.72%	44	9.36%	22	27.23%	64	235	3.06	< 0.001
Medications safety and education and training program	23.01%	55	21.76%	52	19.25%	46	10.46%	25	25.52%	61	239	3.06	< 0.05
Medications safety and research	23.11%	55	19.75%	47	21.85%	52	9.66%	23	25.63%	61	238	3.05	< 0.05
Answered											240		
Skipped											2		

positively executed ADR documentation and reporting tools. The ADR reporting system was mandatory for all healthcare providers to report any ADR that happened with patients. The lowest instigated items were an annual plan reproducing the beginning of medication safety procedures at the dental practice and has not yet been accomplished. There were statistically significant answers ($p<0.05$), imitating the considerable discrepancy in the responders' medication safety implementation.

The average scores of medication safety tools employed in dental practice were low. The high scores among features included implementing medications safe during pregnancy or patients therapy using dental care and lactation. It is reflected and useful for the dentist in daily routine practice. In the study, the dentists attempt to implement the medication's safety with usually used drugs and high alert medications, comprising pain management and anesthesia medications, which daily practice was used. There were statistically significant answers ($p<0.05$) connected to different practices among dentists.

There were no statistically significant answers ($p>0.05$) among four items, including medication errors reporting system, ADR reporting system, drug quality reporting system, looks like sound like medication errors disclosure, and medications safety committee for dental care. That reflected some organizations employed those tools, and others did not function with equal variations in the implantations, particularly those obligatory for total healthcare quality management standards for accreditation.[18] The dentist esteems the pharmacist to be full responsibility for medication safety in dental and is needed to implement dentists. As a result, the dental medications safety program is nearly not fully executed. It desires dentist and pharmacist's

Table 4: The frequently the medications safety items reported in dental care.

	Always		Most the time		Sometimes		Rarely		Never اقالطا		Total	Weighted Average	*p*-value
Medications errors reporting system	18.64%	44	16.53%	39	26.27%	62	19.92%	47	18.64%	44	236	2.97	>0.05
ADR reporting system	20.76%	49	14.83%	35	24.58%	58	21.19%	50	18.64%	44	236	2.98	>0.05
Drug quality reporting system	16.10%	38	18.22%	43	24.15%	57	18.64%	44	22.88%	54	236	2.86	>0.05
Looks alike sound like	18.14%	43	21.10%	50	27.00%	64	15.19%	36	18.57%	44	237	3.05	>0.05
Drug allergy	30.93%	73	20.34%	48	21.61%	51	14.41%	34	12.71%	30	236	3.42	< 0.001
Prohibited abbreviations	18.14%	43	14.77%	35	25.32%	60	18.57%	44	23.21%	55	237	2.86	>0.05
High alert medications	28.39%	67	19.49%	46	21.61%	51	12.29%	29	18.22%	43	236	3.28	< 0.05
Medications reconciliation	34.75%	82	20.76%	49	22.46%	53	8.05%	19	13.98%	33	236	3.54	< 0.05
Medications errors disclosure	23.73%	56	18.22%	43	24.15%	57	16.53%	39	17.37%	41	236	3.14	>0.05
Medications safety committee for dental care	18.30%	43	15.32%	36	21.70%	51	18.30%	43	26.38%	62	235	2.81	>0.05
Basic medications safety course	15.81%	37	13.25%	31	20.94%	49	21.37%	50	28.63%	67	234	2.66	< 0.05
Dental drug information resources	22.88%	54	19.49%	46	29.66%	70	14.41%	34	13.56%	32	236	3.24	< 0.001
Dental therapeutic guidelines	32.34%	76	20.00%	47	27.23%	64	11.91%	28	8.51%	20	235	3.56	< 0.001
Medications storage system	26.38%	62	14.89%	35	24.26%	57	17.45%	41	17.02%	40	235	3.16	< 0.05
Medications wastage services	27.97%	66	16.10%	38	23.31%	55	19.07%	45	13.56%	32	236	3.26	< 0.05
Medications labeling before and use	28.09%	66	19.15%	45	18.30%	43	15.74%	37	18.72%	44	235	3.22	< 0.05
Patients education of dental medications	35.74%	84	21.70%	51	20.85%	49	10.21%	24	11.49%	27	235	3.60	< 0.001
Off-labeling prescribing in dental care	24.15%	57	11.86%	28	24.58%	58	17.37%	41	22.03%	52	236	2.99	< 0.05
Drug-interaction altering system	27.23%	64	16.60%	39	27.66%	65	14.04%	33	14.47%	34	235	3.28	< 0.001
Pregnancy and lactation altering system	47.23%	111	17.87%	42	19.15%	45	6.81%	16	8.94%	21	235	3.88	< 0.001
Electronic prescribing	32.20%	76	16.10%	38	18.22%	43	9.75%	23	23.73%	56	236	3.23	< 0.001
Non formulary dental medication	21.61%	51	11.86%	28	24.58%	58	13.14%	31	28.81%	68	236	2.84	< 0.001
Answered											237		
Skipped											5		

collaboration to twitch the program as soon as possible in dental practice in Saudi Arabia.

There is no statistically significant difference in all applied medications safety aspects and all factors of gender or all age levels or the number of years' experiences or academic qualifications, which look like earlier study or dental positions.[3] Except the male more agreed than female in effecting mission and vision of dental medications safety linked to the male dentists had more leadership than the female compulsory to follow up for this stuff. The age factors did not display any statistical significance among all ages reproduced. The medication safety aspects program was not executed at their dental practice. The high number of experienced agreed more to the implemented mission, vision, policy, procedures, and medication errors reporting. It fallouts due to the high years of experience; more exposure to healthcare organizations' requirements. Most features were encompassed in the dental quality management tools, which look like to earlier study.[3] The academic qualifications did not knowingly disturb the implementation of medication safety in dental care, which looks like earlier study3 except some points highlighted by residents and obligatory from Saudi counsel of healthcare specialties, such as strategic plan, quality management, and medication safety competency. All dental positions did not pointedly affect the dental medications safety aspects, which redirected the inadequate implementation of medication safety programs during dental care. There is no statistical significance in the gender or all age levels or the number of years' experiences or academic qualifications or dental positions with the duty of medication safety in the dental

Table 5: The type of dental medications used the medication's safety system.

	Always		Most the time		Sometimes		Rarely		Never		Total	Weighted Average	*p*-value
Antibiotic for dental care	45.38%	108	15.55%	37	21.43%	51	7.56%	18	10.08%	24	238	3.79	< 0.001
Antifungal for dental care	26.05%	62	21.01%	50	26.47%	63	16.81%	40	9.66%	23	238	3.37	< 0.001
Medications for dental pain	45.38%	108	19.75%	47	19.75%	47	7.98%	19	7.14%	17	238	3.88	< 0.001
Medications for bad breathing	23.73%	56	18.64%	44	25.42%	60	17.37%	41	14.83%	35	236	3.19	> 0.05
Medications for gingival bleeding	30.38%	72	21.94%	52	22.78%	54	13.08%	31	11.81%	28	237	3.46	< 0.001
Medications for gingival swelling	31.93%	76	18.49%	44	27.73%	66	11.76%	28	10.08%	24	238	3.50	< 0.001
Medications for dental abscess	39.50%	94	21.43%	51	25.21%	60	6.72%	16	7.14%	17	238	3.79	< 0.001
Medications for oral ulcer	31.09%	74	24.37%	58	22.69%	54	11.34%	27	10.50%	25	238	3.54	< 0.001
Medications for tooth whitening	26.05%	62	15.97%	38	26.05%	62	16.81%	40	15.13%	36	238	3.21	< 0.05
Medication for tongue problems	25.21%	60	15.13%	36	24.37%	58	20.17%	48	15.13%	36	238	3.15	< 0.05
Teething medications	24.05%	57	15.19%	36	25.32%	60	16.88%	40	18.57%	44	237	3.09	> 0.05
intracanal medications	33.33%	79	18.57%	44	27.00%	64	10.13%	24	10.97%	26	237	3.53	< 0.001
Sedation medications	34.03%	81	15.13%	36	22.69%	54	11.76%	28	16.39%	39	238	3.39	< 0.001
Anesthesia medications	43.28%	103	20.17%	48	22.69%	54	5.46%	13	8.40%	20	238	3.84	< 0.001
Antiviral for dental care	28.57%	68	16.39%	39	31.09%	74	10.08%	24	13.87%	33	238	3.36	< 0.001
Medications for oral hygiene	32.63%	77	23.73%	56	26.27%	62	6.78%	16	10.59%	25	236	3.61	< 0.001
Muscle relaxant medications	22.65%	53	19.66%	46	23.08%	54	19.23%	45	15.38%	36	234	3.15	> 0.05
Anxiolytic medications	22.55%	53	20.00%	47	23.40%	55	17.45%	41	16.60%	39	235	3.14	> 0.05
Answered											238		
Skipped											4		

Table 6: Medication Safety (to authorities) is the responsibility among the following.

	Strongly agree		Agree		Uncertain		Disagree		Strongly Disagree		Total	Weighted Average	*p*-value
Dentist	48.55%	117	33.61%	81	12.86%	31	2.49%	6	2.49%	6	241	4.23	< 0.001
Pharmacist	59.40%	139	23.08%	54	12.82%	30	2.14%	5	2.14%	5	234	4.34	< 0.001
Pharmacy technicians	32.90%	76	29.00%	67	29.00%	67	6.06%	14	3.03%	7	231	3.83	< 0.001
Nurses	23.93%	56	24.79%	58	33.76%	79	12.39%	29	4.70%	11	234	3.50	< 0.001
Drug company	48.50%	113	24.46%	57	18.88%	44	3.86%	9	3.86%	9	233	4.09	< 0.001
Patients	20.87%	48	30.00%	69	25.65%	59	13.48%	31	10.00%	23	230	3.38	< 0.001
Answered												240	
Skipped												2	

practice; all of them settled that pharmacists should take this obligation.

Limitations

The study had numerous strength points that trailed the STROBE guidelines of writing an observational investigation report, employed a self-assessment authenticated survey, and calculated sample size. However, the study had several limitations; the sample number did not influence the optimal level, and the first study was finished on the dental field with a new acquaintance to the responders.

CONCLUSION

The insight of dentists in the medication's safety was insufficient, particularly in the medications safety items. The dentists poorly used medication safety equipment in dental practice. The dentists employed medication safety tools in high-risk medications (a drug for dental pain and anesthesia). The dentists esteem the pharmacist with the high accountability of medication safety in dental care followed by the drug company. The dental medications safety program desires to be recognized in dental care to prevent drug-related problems to progress patients outcomes.

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The authors declare that there is no conflict of interest.

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Consent for Publications

Informed consent was obtained from all the participants

Ethical Approval

This research is exempted from research and ethical committee or an institutional review board (IRB) approval.

https://www.hhs.gov/ohrp/regulations-and-policy/decision-charts-2018/index.html

ABBREVIATIONS

MOH: Ministry of Health; **KSA:** Kingdom of Saudi Arabia; **SPSS:** Statistical package of social sciences; **JASP:** Jeffery's Amazing Statistics Program; **STROBE:** Strengthening the reporting of observational studies in epidemiology; **ADR:** Adverse Drug Reaction.

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