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General

Public Speech Anxiety among Medical Residency Trainees in Riyadh

Taha Alhazmi[1], Aisha Khalid Alraddadi[2], Hussa Ibrahim Alabdulkarim[2], Norah Abdullah Al-Rowais[3]

[1] Department of Family and Community Medicine, College of Medicine, King Saud University Medical City, [2] Department of Family and Community Medicine, King Saud University Medical City, [3] Department of Family and Community Medicine, King Saud University

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Objective

The present study aimed at measuring the level of public speaking anxiety (PSA) among medical residents in Riyadh, in addition to identifying the factors influencing public speaking anxiety from the perspective of the medical residents.

Method

A cross-sectional survey was conducted over a sample of 203 medical residents in Riyadh. The study adopted the questionnaire as a data collection tool. The questionnaire consisted of a demographic data part, PSA scale (17 items) and a third part concerned with the factors influencing public speaking anxiety among medical residents.

Results

The results of the study revealed that medical residents in Riyadh had a low level of public speaking anxiety (47.3±11.32). The participants had a low PSA score on all scale domain; cognitive (23.28±5.43), behavioral (10.45±4.16), and physiological (13.54±3.44). Moreover, the findings of the study showed that stuttering (91.1%), negative perceptions of individuals' own voice (77.8%), and language barriers (76.8%) were the main factors influencing the public speaking anxiety among medical residents. Finally, we found through linear regression analysis that PSA is not significantly predicted by participants' living region, marital Status, gender, residency level, type of pre-college school, age or being previously diagnosed by a mental health issue.

Conclusion

There is a low level of public speaking anxiety among medical residents in Riyadh. In addition, the study concluded that stuttering, negative perceptions about voice and language barriers are negatively influencing the public speaking anxiety among medical residents in Riyadh.

INTRODUCTION

Public Speaking is the act or process of making speeches in public, nowadays it becomes a necessary part of both college and work demands, and being one of the most parameters of person's success.[1] When it comes to effective skills, communication goes beyond the function of delivering information, the voice, the rhythm, and the expressiveness of the speech are into consideration.[2]

Public speaking anxiety (PSA) is a specific subtype of communication-based anxiety, found to be number one fear according to most studies.[3] High levels of PSA have important consequences for those who suffer from it as on the long run PSA can have a lasting impact, people tend to avoid these activities.[4] It was found that among the sources of stress in residents' doctor, academic activities of the department which involve public speech such as seminars, presentations and meetings were the second leading cause of stress.[5]

Furthermore, a study conducted on 324 individuals to investigate the causes of deaths among residents, found that suicide was the second leading cause as an outcome of occupational stress.[6] As a sequel not only this, stress can result in medical errors along with symptoms of impairments such as cognitive impairment and drug abuse.[6] Therefore, it is important to explore the causes of stress as well as burnout in order to identify the preventable causes to account for prevention.[7]

PSA is one of the most common forms of anxiety disorders, with about one in five people are experiencing such anxiety.[8] A study conducted in Saudi Arabia at Taif University among Female Students from January to May 2016 to determine the prevalence of social anxiety disorder (SAD) reported a high prevalence of SAD of 16.3% among them.[9] As PSA presents in most individuals who suffer from the

generalized type of SAD and it also occurs in the absence of other manifestations of SAD.[10] A study in a community sample in Canada (n=49), 10% reported that PSA had resulted in a marked interference with their work.[10]

Research into fear of public speaking among medical residents, as well as medical students, will increase interest at the administrative level to look into the weaker areas for improvement. Also, the academic community would work on building public-speaking skills and assist in organizing and improving program.[1] To communicate effectively with the audience, a number of aspects of interpersonal communication need to be considered by public speakers which are verbal/oral; and non-verbal communication.[10] A meta-analysis of 13 controlled studies of communication skills teaching has demonstrated a modest improvement in the communication skills after completing communication skills training courses.[11] In fact, training doctors to develop their communication skills could be cost-effective as it enhances patients' adherence.[12]

The present study aimed at measuring the level of public speaking anxiety among medical residency program trainees in Riyadh city, Saudi Arabia.

METHOD

STUDY DESIGN

The present study was a cross-sectional survey that was performed in the period between July 2020 and August 2021. The cross-sectional research design was adopted in this study due to its suitability to the research objectives, cost-effectiveness and quick approach.

STUDY POPULATION AND SAMPLING

The population of the present study comprised all medical residents from all specialties in all hospitals in Riyadh. Convenience sampling was adopted to recruit the study participants. Convenient sampling was used due to the advantages of this sampling procedure that include being least time-consuming, least expensive, and most convenient.

SAMPLE SIZE

The sample size was calculated using G*Power 3.1.9.7 with related F-test, using a medium effect size (0.15), α equals to 0.05, a power of 0.95, a number of predictors equal to 7, and a critical F of 2.07, the minimum sample size was calculated to be 153 participants. A total of 10% was added to avoid drop out issues and any technical problems. Therefore, the minimum sample size was calculated to be 168. However, a total of 203 participants were enrolled in this study.

DATA COLLECTION INSTRUMENT

A questionnaire was used to collect data from the study participants. The study questionnaire consisted of three parts, as following: Part A, which included items to elicit the demographic characteristics of the study participants (Age, gender, seniority level, type of pre-college school, living region, and previous diagnosis with mental health issue). Part B, which was the Public Anxiety Scale (PSAS) published in Bartholomay & Houlihan[13] that comprised 17 items distributed over three domain; the cognitive domain (8 items), the behavioral domain (4 items) and the physiological domain (5 items). The items in the three domains were scored as: (1) not at all, (2) slightly, (3) moderately, (4) very, and (5) extremely. Items 6, 7, 8, 16, and 17 were reverse coded. The PSAS was validated in the original study and checked for the reliability in the Saudi context. The reliability scores across the three domain ranged between 0.76 and 0.83. The total reliability score for the PSAS was 0.79. Finally, part C, which included 13 items to elicit the participants' responses regarding the factors influencing public speaking anxiety among medical residents. The scale was validated and checked for reliability using Cronbach's Alpha coefficient. The reliability coefficient was 0.73, which is acceptable to achieve the study objectives.

ETHICAL CONSIDERATIONS AND DATA COLLECTION PROCEDURE

The study was approved by the Institutional Review Board (IRB) at King Saud University (Ref. No. 20/0793/IRB, E-20-4942-D). Besides, the researchers obtained the permission to use the data collection tool from the questionnaire authors. In addition, the researchers ensured the voluntary participation of the study subjects, the anonymity of their identities and responses during and after the study is accomplished.

The data collection procedure included preparing an online version of the study questionnaire with an electronic consent form. The participants' were asked to fill in the consent form in order to be able to access the study questionnaire. The questionnaire link was distributed among the medical residents groups either on social media platforms or by personal contact with colleagues in the different wards and departments. The data collection process lasted for four weeks in order to ensure recruiting highest number of participants. The collected data were retrieved as Excel sheet and subjected to statistical analysis based on the study objectives.

DATA ANALYSIS

The gathered data was retrieved as an Excel sheet containing non-coded participants' responses. The data was organized, coded and entered into the Statistical Package of Social Sciences (SPSS) software. Descriptive statistics (Frequencies, percentages, means and standard deviations) were used to analyze the participants' responses on the questionnaire items. In addition, means and standard deviations were used to scale the participants' scores on the PSAS domains. Linear Regression Analysis was used to identify the PSA predictors among the participants' demographic characteristics. A statistical significance value ($\alpha \leq 0.05$) was used as a significance level in this study.

Table 1. socio demographic characteristics of the recruited medical residents (n=203)

Variable	M±SD	F (%)
Age	27.6± 3.14	
Gender		
1. Male		104 (51.2)
2. Female		99 (48.8)
Marital Status		
1. Single		**67 (33)**
2. Married		**133 (65.5)**
3. Divorced or Widowed		**3 (1.5)**
Living Region		
1. Rural		**37 (18.2)**
2. Urban		**166 (81.8)**
Type of pre-college school		
1. Governmental school		**124 (61.1)**
2. Private school		**79 (38.9)**
Seniority Level		
1. Junior		**116 (57.1)**
2. Senior		**87 (42.9)**
Have you ever been diagnosed with mental health disorder		
1. Yes		23 (11.3)
2. No		180 (88.7)

RESULTS

A total of 203 participants enrolled in the present study. The findings shown in table (1) represent the background characteristics of the study participants. The mean age of the study participants was (27.6± 3.14). Distributing the study sample based on gender revealed that 51.2% (n=104) were males, whereas 48.8% (n=99) were females. In addition, it was found that 65.5% (n=133) of the participants were married, whereas 33% (n=67) and 1.5% (n=3) were single and divorced/widowed, respectively.

About 81.8% (n=166) of the participating medical residents were living in urban areas, whereas 18.2% (n=37) were living in rural areas. Moreover, it was found that 61.1% (n=124) went to governmental school before college, whereas 38.9% (n=79) went to private schools. Further, the results revealed that junior medical residents constituted 57.1% (n=116), whereas senior residents comprised about 42.9% (n=87) of the total study sample. Finally, the results presented in table (1) showed that 11.3% (n=23) had been diagnosed previously with a mental disorder, whereas 88.7% (n=180) had not been diagnosed with any mental health disorder before.

PARTICIPANTS' RESPONSES ON THE PUBLIC SPEAK ANXIETY SCALE (PSAS)

The results presented in table (2) represent the mean and standard deviation scores for the participants' responses on the PSAS statements. It was found that feeling satisfied after giving a speech was the highest ranked statement (3.81±1.18), followed by the statement indicating not having problems making eye contact with audience (3.47±1.34). In the third rank was the statement stating that "I am focused on what I am saying during my speech", which obtained a score of (3.36±1.17).

However, the lowest scored statements as shown in table (2) included the statement stating that "My voice trembles when I give a speech" with a score of (2.37±1.30), followed by the statement "I sweat during my speech", which scored (2.17±1.26), and finally the statement stating that "I feel sick before speaking in front of a group", which got a mean and standard deviation score of (2.08±1.27).

The total score of the PSAS was (47.3±11.32), which is located in the low public speech anxiety range, as the threshold score of the scale is 51.00.

The findings presented in table (3) represent the mean and standard deviation scores of the participants' responses to the PSAS domains. The findings showed that the study participants had low anxiety score on the cognitive domain (23.28±5.43), low anxiety score on the behavioral domain (10.45±4.16), and low anxiety score on the physiological domain (13.54±3.44). Totally, it was found that the participants had low public speech anxiety score (47.3±11.32).

FACTORS INFLUENCING PUBLIC SPEECH ANXIETY

The results presented in table (4) shows the participants' responses regarding the factors influencing the public speech anxiety, it was found that having stuttering was ranked firstly (91.1%, n=185), followed by having negative perceptions of voice (77.8%, n=158). In the third rank was the factor related to the language barriers (76.8%, n=156), followed by the factor related to being discomfort about appearance (64.5%, n=131).

On the other hand, the lowest reported factor influencing public speech anxiety among medical residents were having concerns about others' judgment (30.5%, n=62), having previous experience of public speech during high school (24.6%, n=50), concerns of being evaluated (22.2%, n=45), and poor or insufficient preparation of the presented material (13.8%, n=28).

PREDICTORS OF PUBLIC SPEECH ANXIETY

The results shown in tables (5-7) represent the linear regression analysis for the participants' demographic characteristics predicting the public speech anxiety score. An analysis of variance showed that there was no significant effect of participants' demographic characteristics on the public speech anxiety score, F (7, 195) =1.053, p=0.396.

A simple linear regression was calculated to predict public speech anxiety score based participants' Living Region, Marital Status, Gender, Seniority level, Type of pre-college school, Age, and whether having been diagnosed of mental health disorder previously or not. No significant regression

Table 2. Mean and Standard Deviation scores of the participants' responses to the PSAS statements (n=203)

Item	M±SD	Rank
Giving a speech is terrifying	2.73±1.21	8
I am afraid that I will be at a loss for words while speaking	2.63±1.19	10
I am nervous that I will embarrass myself in front of the audience	2.64±1.26	9
If I make a mistake in my speech, I am unable to re-focus	2.38±1.18	14
I am worried that my audience will think I am a bad speaker	2.44±1.29	12
I am focused on what I am saying during my speech	3.36±1.17	3
I am confident when I give a speech	3.29±1.08	4
I feel satisfied after giving a speech	3.81±1.18	1
My hands shake when I give a speech	2.43±1.34	13
I feel sick before speaking in front of a group	2.08±1.27	17
I feel tense before giving a speech	2.90±1.22	7
I worry before speaking	3.05±1.24	5
My heart pounds when I give a speech	2.93±1.29	6
I sweat during my speech	2.17±1.26	16
My voice trembles when I give a speech	2.37±1.30	15
I feel relaxed while giving a speech	2.61±1.24	11
I do not have problems making eye contact with my audience	3.47±1.34	2
Total score	47.3±11.32	

Table 3. Mean and Standard Deviation scores of the participants' responses to the PSAS domains (n=203)

Domain	M±SD	Degree
Cognitive Domain	23.28±5.43	Low
Behavioral domain	10.45±4.16	Low
Physiological domain	13.54±3.44	Low
Total scale	47.3±11.32	Low

equation was found (F (7,195) = 1.053, p=0.396, with an R^2 of 0.036

DISCUSSION

The overwhelming concern of the present study involved determining the level of public speech anxiety among medical residents in Riyadh. The findings of the present study indicated that there was a low level of public speech anxiety among the medical students under investigation. This result might be referred to the continuous practice of public speaking by the study participants, who are exposed to daily discussions, conversations and meetings either with individuals from the same medical field or with people attending the facilities of the healthcare setting. The practice of public discussion and conversations was reported to significantly decrease the level of public speech anxiety.[3]

In addition, these findings might be attributed to the type of profession practice the medical residents perform, in term of patient's education, guidance, debates and other activities that expose medical residents to speaking situations, which remarkably increases their abilities and strengthen their skills in public speaking. This is evidenced by the findings reported by Schraeder et al[14] who indicated that practicing communication skills with patients improves the physicians' public speaking skills.

Our findings revealed that there was a low level of public speaking anxiety among medical residents in Riyadh on the cognitive, behavioral and physiological domains. This result might be referred to nature of the study participants, who are more familiar with clinical presentations of social anxiety situations, including public speaking anxiety, which might enable them to cope with these situations effectively. This is evidenced by the findings reported by O'Dowd et al[15] who indicated that physicians have a good level of coping mechanisms that enable them to deal effectively with stressful situations and challenging events. In addition, O'Dowd et al[15] reported that physicians had a higher level of resilience when exposed to stressful situation, which was referred by the authors to their background knowledge and attitudes towards cognitive and physiological manifestation of anxiety.

The findings of the study highlighted a number of significant factors that might either negatively or positively affect the level of public speech anxiety. These factors included stuttering, negative perceptions about the person's voice, language barriers and discomfort with body appearance. This result might be referred to these reasons may lead to a state of confusion for the speaker, which causes him/her to lose focus on the topic in question and increase the state of stress and anxiety when publicly speaking. These findings are consistent with the results reported by Marinho et al[16] who found that negative self-perceptions

Table 4. Frequencies and percentages of the participants' responses to the factors influencing public speech anxiety (n=203)

Factor	Yes F (%)	Rank
Having Previous Experiences of public speaking during high school?	50 (24.6)	11
Having stuttering?	185 (91.1)	1
Does the Influence of voice contribute to the fear of public speaking?	106 (52.2)	7
Do you have language barriers?	156 (76.8)	3
Do the new work demands influence the fear of public speaking?	119 (58.6)	6
Does having an appearance or condition that draws attention (Discomfort with your own body) contribute to the fear of public speaking?	131 (64.5)	4
Does the concern that others are judging you increase the level of public speaking anxiety?	62 (30.5)	10
Does the concern of being evaluated increase the level of public speaking anxiety?	45 (22.2)	12
Does poor or insufficient preparation of the presented material negatively affecting public speaking anxiety?	28 (13.8)	13
Does the thought of comparing yourself to others increase the level of public speaking anxiety?	81 (39.9)	8
Do have a negative perception of your voice?	158 (77.8)	2
Does the audience reaction influence the fear of public speaking?	69 (34)	9
Participation in extracurricular activities during undergraduate years involving speaking to an audience?	129 (63.5)	5

Table 5. Summary of the linear regression model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.191[a]	.036	.002	11.30965

a. Predictors: (Constant), Have you ever been diagnosed with mental health issue, Living Region, Marital Status, Gender, Seniority level, Type of pre-college school, Age

Table 6. Analysis of Variance (ANOVA) results from linear regression analysis for demographic factors predicting the public speech anxiety score

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	942.918	7	134.703	1.053	.396[b]
	Residual	24942.077	195	127.908		
	Total	25884.995	202			

a. Dependent Variable: Public Speech Anxiety Score

b. Predictors: (Constant), Have you ever been diagnosed with mental health issue, Living Region, Marital Status, Gender, Seniority level, Type of pre-college school, Age

and language barriers were the most factors influencing public speaking.

Furthermore, the findings of the present study revealed that age, gender, marital status, level of residency, type of pre-college school, living region, or being diagnosed with a mental health disease or not, all were non-significant predictors of public speaking anxiety. This result might be referred to that public speaking is an activity that is more dependent on skills and practice rather than demographic characteristics. Public speaking activity mainly depends on knowing audiences, organizing material, watching feedback, using body language, giving examples and demonstrations, in addition to many other presentation skills. However, the indirect effect of the previously listed demographic variables could be considered a secondary effect, but could not be ignored as the public speaking components (mental, vocal, physiological, etc.) depends on the demographic variables and mental health status of the individuals.

Despite the significant findings of the present study, still there are a number of limitations that could limit the generalization of these findings. A significant limitation is the geographical and human limitation, which includes conducting the present study in Riyadh and recruiting the medical residents as a research sample. Therefore, the findings of this study are inclusive for medical residents in Riyadh and cannot be generalized to medical residents in other healthcare facilities in Saudi Arabia. Another limitation is that the present study was performed during COVID-19 pandemic, which was reported to significantly affect the mental health status of the healthcare workers (anxiety, depression and resilience levels). Therefore, the results of this study could be restricted to the public speak-

Table 7. Regression analysis summary for the demographic characteristics predicting the public speech anxiety score

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	40.341	9.858		4.092	.000
	Gender	1.443	1.635	.064	.883	.378
	Age	-.190	.291	-.053	-.653	.514
	Marital Status	-.449	1.650	-.021	-.272	.786
	Living Region	2.535	2.093	.087	1.211	.227
	Type of pre-college school	.674	1.726	.029	.390	.697
	Seniority level	.468	1.722	.021	.272	.786
	Have you ever been diagnosed with mental health issue	3.971	2.599	.111	1.528	.128

a. Dependent Variable: Public Speech Anxiety Score

ing anxiety during crises situations, such as COVID-19 pandemic.

CONCLUSION

The present study sought to measure the level of public speaking anxiety among medical residents in Riyadh. The findings of the study showed that there is a low level of public speaking anxiety among medical residents at all public speaking levels (cognitive, behavioral and physiological). In addition, the study concluded that stuttering, negative perceptions of individuals' own voice and language barriers were the most reported factors influencing the level of public speaking anxiety. Finally, the study concluded that public speaking anxiety is not predicted by the medical residents' age, gender, marital status, level of residency, type of pre-college school, living region, or being diagnosed with a mental health disease or not.

Based on the findings of the present study, the study recommends holding more educational and training sessions for the medical residents in Riyadh to increase their awareness, knowledge and practice of public speaking skills, in addition to encouraging them to strengthen their language abilities, improve their communication skills and presentation skills.

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CONFLICT OF INTEREST

No conflict of interest

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AUTHORS' CONTRIBUTION

The authors would like to declare that all authors contributed significantly to the production of this manuscript. The authors equally formulated the research problem, reviewed the literature, designed the research procedure, participated in the data collection process, data analysis and interpretation, in addition to finalizing the manuscript in the current format.

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