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Original Research Article

Prevalence and determinants of public speaking anxiety in family medicine residents

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ABSTRACT

Objective: To estimate the prevalence and to explore the determinants of public speech anxiety (PSA) among family medicine trainees at the Joint Program of Family Medicine, Jeddah, Saudi Arabia, 2020.
Materials and Methods: A cross-sectional study was conducted online for 131 residents who completed the original version (34 items) of the Personal Report of Public Speaking Anxiety (PRPSA) scale. The PRPSA score (range 34-170) was calculated as the sum of the item scores, and three PSA levels were defined including low (PRPSA score <98), moderate (PRPSA score 98-131), and high (PRPSA score>131). Sociodemographic and academic data were collected and analyzed as factors of PSA.
Results: The mean PRPSA was 100.27 out of 170 (SD = 18.10). Of the participants, 55.0% had moderate and 6.9% had high PRPSA scores. Female participants had a higher percentage of moderate (61.5% vs 45.3%) and high (9.0% vs 3.8%) PRPSA scores compared with males, respectively (p=0.041). A previous negative experience with public speech was also associated with a higher percentage of moderate (73.7% vs 47.3%) and high (15.8% vs 3.2%) PRPSA scores compared to absence of such an experience (p<0.001). Likewise, participants with a family history of social anxiety had a higher risk of increased PRPSA (p=0.022).
Conclusion: The latency and high prevalence of PSA among family medicine residents highlight the relevance of incorporating curricula to enhance public speaking and communication skills among medical trainees.

1. Introduction

Public speech anxiety (PSA), or public-speaking phobia, is a specific entity of social anxiety disorders, or social phobia disorders,[1] which are characterized by fear attitude and avoidance behaviors towards specific social situations, in anticipation of being negatively appraised or rejected by the others.[2] Most cases of PSA cases are presumably benign, and frequently underdiagnosed or confounded within other symptoms of social phobia. However, it is estimated that one-third of PSA cases are distinctively occurring in speech situations and are classified as a distinct subtype of social anxiety disorder in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5).[1,3–5]

Generally speaking, anxiety disorders represent the most common mental disorders,[6] affecting one-third of the population at some point of their lives.[7] They refer to excessive, anticipated fear that interferes with daily social relationships and professional performance of an individual, resulting in multidimensional impact on the quality of life and psychosocial wellbeing.[8–11] Likewise, PSA, among other social anxiety disorders, is associated with impaired

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psychosocial functioning, where the performance anxiety leads viciously to low social, occupational, and educational performance of the individual, self-depreciation, and social exclusion.[4,12–14]

The other distinctive characteristic of PSA is the differential implication of the symptoms and their impact depending on the social and professional status and expectations of the individual. PSA symptoms may be more debilitating for individuals with occupations that rely particularly on public speech performance. A mixed-method study from Oman showed that PSA among college graduates was associated with low self-confidence and perceived academic skills, which impacted students' aptitude to demonstrate their skills to their employer.[15] Another study from Jizan, Saudi Arabia, demonstrated that undergraduate students with higher scores for social anxiety disorder underwent significant social and professional disability, and fear and avoidance of public speech was the most frequently reported situation of social phobia.[16] Another remarkable feature of PSA is its association with foreign languages and the individual's proficiency in the given language. A study involving English as Foreign Language (EFL) students in Saudi Arabia showed that up to 87% reported speech anxiety symptoms while speaking in English and the presence of PSA was negatively correlated with the student's performance in the speaking test.[17] Another Malaysian study among international postgraduate students showed that students with poor skills and competence in the English language were at higher risk of PSA compared with those who had good skills and competence.[18]

In the medical profession, literature lacks data on the prevalence or impact of PSA. Yet, medical trainees and professionals are exposed to several situations of audience speech as part of their training or professional and academic duties, such as case presentations and conference presentations, etc. Thus, besides being a good clinician, physicians need to master the art of public speaking to enhance their productivity in clinical, academic, and community-based activities. Previous evidence showed that interpersonal and communication skills among medical professionals are correlated with the patient's health outcomes, as reduced communication skills are associated with greater risk or error.[19] The researchers hypothesized that PSA is a disabling and underdiagnosed condition among medical residents, which would affect their clinical and communication skills and require recognition and corrective measures.

As such, the researchers designed this study to estimate the prevalence, to assess the severity, and to explore the determinants of PSA among family medicine trainees at the Joint Program of Family Medicine, Jeddah, Saudi Arabia, 2020.

2. Materials and Methods

2.1. Design and participants

This is a descriptive and analytical cross-sectional study carried out among all family medicine residents, at all educational levels, who were registered at the Joint Program of Family Medicine in Jeddah, Saudi Arabia, in 2020. The study protocol received ethical approval from both the director and the research committee of the Joint program of the Family Medicine of Jeddah.

2.2. Settings

The Joint Program of Family Medicine, Jeddah, includes three sectors, the Ministry of Health, King Fahad Armed Forces Hospital, and King Faisal Specialist Hospital and Research Center. The program included four levels of training, R1-R4. This program is approved by the Saudi Commission for health specialties, besides other programs of family medicine such as the National Guard Hospital and King Abdulaziz University Hospital.

2.3. Sampling

A total of 195 residents were available in the 2020 program. They were distributed across the levels as follows: level one (n= 42; females=22, males=20) level two (n=53; females=29, males=24) level three (n=52; females=31, males=21) level four (n=49; females=41, males=8).

By using the Raosoft sample size calculator program, the calculated sample size was 130 residents. The following parameters have been used to calculate the sample size: estimated margin error 5%, 95% confidence level, and the prevalence rate of PSA 50% (unknown). Ten percent of the calculated sample size was added to compensate for the defaulters. Therefore, the final sample size was 144 residents.

A stratified sampling technique was used to select 36 residents from each level. No stratification per gender was performed.

2.4. Data collection tool

Data was collected via a validated, self-administered questionnaire in the English language. The questionnaire comprised of three sections. Section one explored sociodemographic and academic factors which included age category, gender, residency level, previous negative experience with public speech, and family history of social anxiety. Section two consisted of the Personal Report of Public Speaking Anxiety (PRPSA) questionnaire, which is a 34-item scale developed by McCroskey, in 1970, for measuring fear of public speaking.[20] Each of the 34 items is rated on a five-item Likert-type agreement scale, ranging from 1 (strongly disagree) to 5 (strongly agree). Among the items, 22 enclose negative statements, such as "I feel

anxious while waiting to give my speech", while 12 items are positive statement, such as "I enjoy preparing for a speech". The PRPSA score (range 34-170) was calculated as the sum of the item scores, and three PSA levels were defined including low (PRPSA score <98), moderate (PRPSA score 98-131), and high (PRPSA score>131). In the scoring system, the positively formulated items of PRPSA are reversed so that higher scores reflect higher levels PSA. The 34-item version of the PRPSA was shown to have an excellent internal consistency, with a Cronbach's alpha 0.90-0.94.[20,21] Section three explored three specific situation s of public speech anxiety including difficulty presenting in English, in front of an audience from the opposite gender, and in front of an audience of higher educational level (3 items).

2.5. Data collection technique

The questionnaire was edited on Google Forms platform and distributed as a link that was disseminated by SMS to the mobile phone numbers of each participant.

2.6. Study variables

2.6.1. The dependent variable

The study outcome consisted of the level of PSA indicated by the PRPSA score, which was categorized into three levels: low (PRPSA score <98), moderate (PRPSA score 98-131), and high (PRPSA score >131).

2.6.2. The independent variables

Gender, age, residency training level, family history of social anxiety disorder, and previous negative experience while public speaking.

2.7. Statistical methods

Data was analyzed using SPSS, version 20 for Windows (IBM SPSS Statistics 20, IBM Corporation, Armonk, NY, USA, 2014). Descriptive statistics were used to present frequencies and percentages on categorical variables and means and standard deviations (SD) on continuous variables. Chi square was used to analyze the association between the levels of PSA and the explored sociodemographic and academic factors. Further, the effect of the resident's gender on certain specific situations was analyzed using chi square test. A P-value < 0.05 was considered for significance.

3. Results

3.1. Characteristics of the study population

One hundred and thirty-one residents completed the questionnaire. Of these, 59.5% were female and 90.1% were aged 25-29 years. The distribution across residency level was quite fair 20-30% by level (Table 1).

Table 1: Characteristics of study population (N=131)

Variable	Frequency	Percentage
Age		
Less than 25	1	0.8
25 to 29	118	90.1
30 to 34	11	8.4
More than 34	1	0.8
Total	131	100.0
Gender		
Male	53	40.5
Female	78	59.5
Total	131	100.0
Residency Training Level		
R1	26	19.8
R2	39	29.8
R3	26	19.8
R4	40	30.5
Total	131	100.0

3.2. Levels of PSA

The mean PRPSA was 100.27 out of 170 (SD = 18.10). Of the participants, 55.0% had moderate and 6.9% had high PRPSA scores (Table 2).

Table 2: Frequency distribution of personal report of public speaking anxiety

PRPSA Level (score)	Frequency	Percentage
Low (<98)	50	38.2
Moderate (98-131)	72	55.9
High (131)	9	6.9

PRPSA: Personal Report of Public Speaking Anxiety

3.3. Factors associated with Personal Report of Public Speaking Anxiety

The levels of PSA were significantly associated with gender, residency level, previous negative experience with public speech, and family history of anxiety (Table 3). Female participants had a higher percentage of moderate (61.5% vs 45.3%) and high (9.0% vs 3.8%) PRPSA scores compared with males, respectively (p=0.041). R3 residents had the highest percentage of high PRPSA score (23.1%), followed by R1 (7.7%) and R2 (2.6%), while 0.0% of R4 displayed high PRPSA scores (p=0.020). A previous negative experience with public speech was also associated with a higher percentage of moderate (73.7% vs 47.3%) and high (15.8% vs 3.2%) PRPSA scores compared to absence of such an experience (p<0.001). Finally, participants with a family history of social anxiety had a higher risk of increased PRPSA (p=0.022).

Table 3: Factors associated with personal report of public speaking anxiety (N=131)

Level	Low		Moderate		High		Total		Statistics	p-value
Variable						%		%		
Age (years)	**n**		**n**							
<25	0	0.0	1	100.0	0	0.0%	1	0.8	5.167	0.683
25-29	44	37.3	66	55.9	8	6.8%	118	90.1		
30-34	5	45.5	5	45.5	1	9.1%	11	8.4		
>34	1	100.0	0	0.0	0	0.0%	1	0.8		
Gender										
Male	27	50.9	24	45.3	2	3.8%	53	40.5	6.337	0.041*
Female	23	29.5	48	61.5	7	9.0%	78	59.5		
Residency level										
R1	9	34.6	15	57.7	2	7.7%	26	19.8	13.838	0.020*
R2	13	33.3	25	64.1	1	2.6%	39	29.8		
R3	8	30.8	12	46.2	6	23.1%	26	19.8		
R4	20	50.0	20	50.0	0	0.0%	40	30.5		
Previous negative experience with public speech										
Yes	4	10.5	28	73.7	6	15.8%	38	71.0	21.519	0.000*
No	46	49.5	44	47.3	3	3.2%	93	29.0		
Family history of social anxiety										
Yes	4	21.1	12	63.2	3	15.8%	19	14.5	10.636	0.022*
No	39	47.6	40	48.8	2	2.4%	82	62.6		
I don't know	7	23.3	20	66.7	3	10.0%	30	22.9		

3.4. Specific situations of public speech anxiety and the effect of gender

The prevalence of speech anxiety was remarkably high in the following situations: presenting in English (62.8%); presenting in front of an audience from the opposite gender (73.6%); and presenting in front of an audience of a higher educational level (84.6%). No statistically significant difference was observed between the two genders regarding these specific issues (p>0.05) (Table 4).

4. Discussion

4.1. Relevance and summary of findings

The significance of investigating PSA lies in its potential of harming the social life, academic, and professional careers of afflicted individuals, which may further impair their psychosocial well-being and have a significant social and economic impact at a larger scale. Estimating the prevalence and analyzing the determinants of PSA among medical residents enables appraising its burden on the medical profession and the relevance of implementing measures to prevent and tackle its consequences. This study showed that almost two-third of the family medicine residents experienced moderate or severe levels of PSA, with females being at higher risk than males. A previous negative experience with public speech as well as a family history of social anxiety was also significant factor for both moderate and severe PSA. The prevalence of anxiety was found to be higher in front of certain specific audience, notably that from the opposite gender or higher educational level.

4.2. Self-reported fear of speech

Most of the scales used to assess PSA are based on self-reported items related to cognitive, behavioral, and or psychological aspects of fear of speaking in public and avoidance behaviors. Among the other scales that are used to assess PSA are the Speech Anxiety Thoughts Inventory,[22] the Self-Statements During Public Speaking,[23] and the Public Speaking Anxiety Scale.[24] The specificity of PRPSA design is that it is more appropriate in the educational context. A short version of the PRPSA, PRPSA-18, comprising of 18 items was found to be valid, reliable (Cronbach's alpha = 0.96), and strongly correlated with the original version (correlation coefficient = 0.99). The PRPSA-18 version was found to have a bifactorial structure, and the two factors were termed "Anticipatory anxiety and physiological symptoms during speech performance" and "Lack of control during speech performance".[25] However, the original version of PRPSA was previously demonstrated to have a unifactorial structure by its developers,[20] while another one found a six-factor structure.[21] Analyzing the factorial structure of PRPSA was beyond the objectives of this study.

4.3. Levels of public speech anxiety

The researchers found high levels of PSA in the studied population of medical residents. By considering both moderate and high PRPSA scores, approximately, 62% of the study population would suffer PSA symptoms at different levels or circumstances. This represents more than twice as much as the prevalence reported in the general

Table 4: Effect of gender on specific situations of public speech anxiety (N=131)

Situation	Total	%	Male	%	Female	%	Statistics	p-value
Difficulty presenting in English								
Yes	76	62.8	26	59.1	50	64.9		
No	45	37.2	18	40.9	27	35.1	0.409	0.522
Difficulty presenting in front of an audience from the opposite gender								
Yes	92	73.6	37	77.1	55	71.4		
No	33	26.4	11	22.9	22	28.6	0.0106	0.898
More anxiety presenting in front of an audience from a higher educational level								
Yes	104	84.6	40	88.9	64	82.1		
No	19	15.4	5	11.1	14	17.9	1.021	0.312

population, estimated between 15-30%.[1] Other data among postgraduate medical students showed that 17% of the participants had symptoms indicative of PSA.[26] This is significantly lower than the prevalence of PSA found in the present study. However, other studies reported findings that are similar to the present study. A study conducted at the University of Karachi showed that 33.3% and 41.0% of the participating male and female students reported moderately high anxiety of public speaking and 29% and 38% reported moderate fear, respectively.[27] Another Brazilian study that included 1,124 undergraduate university students from different faculties found a prevalence of PSA as high as 53%, using the Self-Assessment Scale for Speaking in Public.[28]

The differences across studies may be explained by methodological issues, including the use of different assessment tools. However, regardless of the assessment tool and validity of the findings, PSA remains an underdiagnosed and underrecognized entity, and this represents another aspect of its importance. Afflicted individuals often develop adaptive strategies to cope up with anxious situations and are less likely to seek for specialist help. A Swedish study among university students established a strong correlation between PSA and social phobia, where the concerned students developed avoidance behaviors, sometime subtle, in anticipation of speaking situations, besides other dysfunctional strategies. Furthermore, authors observed that social phobia prompted 16% of the concerned student to use anxiolytic drugs and 16% to extensive rehearsal in anticipation of a public speech.[29] Another Saudi study showed a high prevalence of avoidance behaviors among Saudi university students, as a result of social anxiety disorder.[16]

4.4. Specific situations of public speaking anxiety

Two specific situations related to the type of audience demonstrated to be associated with a particularly high prevalence (74%-85%) of fear of speaking, with no significant difference across gender. These included presenting in front of an audience from the opposite gender or an audience of a higher educational level. Several features of the audience have been observed to influence the levels of PSA, such as the audience size,[30] behavior and responsiveness (neutral, positive, or hostile), 31 and cultural or gender composition.[31] Furthermore, findings from the present study suggested that nearly 63% of the family medicine residents experienced anxiety when they have to present in the English language, with no significant difference between genders. The correlation of PSA with foreign language speaking is well-known and has been extensively addressed in the literature.[17,32,33] Several authors present foreign language anxiety as a distinct entity of PSA, as it may be isolated and multifactorial.[34] In the case of Saudi medical trainees, because the curriculum is in English language, English language anxiety may be associated with low English proficiency, which may have a great impact on the scientific learning and communication abilities of the student throughout the college years.[35] A local study showed that difficulties in English among Saudi medical students were associated with higher scores of generalized anxiety disorders.[36]

4.5. Tackling public speaking anxiety in medical residents

The latency and high prevalence of PSA among family medicine residents highlights the relevance of incorporating curricula to enhance public speaking and communication skills among medical trainees. These curricula should adopt evidence-based approaches. Clinically wise, where it may be debatable to consider screening for PSA and establishing a clinical diagnosis, it would be helpful to screen for severe cases with debilitating symptoms impacting the social life and academic career. However, developing an evidence-based therapeutic approach requires the assessment of the levels of social phobia and PSA in the pre- and post-intervention times, at least in the research phase.

These approaches may use different psychotherapeutic strategies, combined with social learning and or educational strategies. Several therapeutic strategies based on different psychological theories have been developed and tested in

PSA and social anxiety disorders. Examples of methods that showed satisfying results in reducing anxiety include cognitive and behavioral therapies,[37] stress inoculation training,[38] attention modification interventions,[39] and hypnotherapy-based approaches.[40] On the other hand, the researchers noted the recent emergence of internet-delivered therapies using either cognitive and behavioral therapy approaches or self-help programs.[1] Among these methods is the use of online group exposure sessions, which showed significant improvement of PSA symptoms among afflicted university students, and the therapeutic effect persisted one year after the intervention.[41] Other approaches were based on virtual reality environments. A systematic review including 13 controlled trials showed that exposure to public speech using virtually recreated situations and spaces had 77% efficacy in reducing PSA in students with diagnosis or symptoms of social anxiety disorders.[42]

Other interventions were based on educational approaches, delivering courses on the art of speaking. These approaches are based on the assumption that people are not born public speakers; but are trained to become one. In such approaches, nervousness and other psychosomatic symptoms occurring while delivering a public speech may be considered "physiological" at certain levels, and would disappear after adequate training. A pre-post-interventional study showed significant reduction in mean PRPSA score from 114.8 to 102.2 among 468 undergraduate university students after the completion of a standardized course on the basics of public speaking. Furthermore, researchers observed that the intervention efficacy was greater among females, who had higher levels of PSA in baseline.[43] Such approaches, purely educational, may have the benefit of reducing the stigma and other eventual adverse effects that may result from a positive diagnosis of PSA of social anxiety disorder.

Other interventions used pharmacological approaches. A placebo-controlled trial by Bergamaschi et al. demonstrated the beneficial effect of pre-treatment with cannabidiol in reducing PSA and the resulting cognitive impairment.[44] Such effect probably explains the association of social anxiety disorder with cannabis misuse.[45] The same associations were observed with alcohol and other substance misuse,[46,47] which adds another weight on the burden of PSA in some specific populations and call for extreme caution in the promotion or use of certain derivative drugs.

5. Limitations

The present study failed to explore certain potential factors and confounders of PSA such as socioeconomic class, personal history of anxiety disorders, English proficiency, academic performance, and experience in conference presentation, etc. This, added to the methodological limitations such as the small sample size and internet-based assessment, may impact the generalizability of the findings.

6. Conclusion

Public speaking anxiety is an underdiagnosed and highly prevalent condition. Approximately two-third of the family medicine residents experience significant symptoms related to PSA, which may be debilitating for 7% of them. Female trainees as well as those with a family history of social anxiety disorder have higher risk of PSA. The latency and high prevalence of PSA among family medicine residents highlights the relevance of incorporating curricula to enhance public speaking and communication skills among medical trainees. More research and clinical studies are warranted to estimate the prevalence and analyze the determinants of PSA, and to determine evidence-based preventive and therapeutic approaches. The use of virtual reality and education-based methods may be particularly effective and cost-effective in the context of medical students and other concerned health professionals.

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None.

8. Conflict of Interest

None.

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