



Anxiety, Social Phobia, Depression, and Suicide among People Who Stutter; A Review Study

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Abstract

Background: Mental disorders in people who stutter are controversial among researchers. This review study aims to probe four common mental disorders, including anxiety, social phobia, depression, and suicide in people who stutter (PWS) as well as in people who do not stutter (PWNS).

Materials and Methods: For the purpose of this review study, we searched 5 combined keywords, including stutter and anxiety, stutter and social anxiety, stutter and depression, stutter and mental disorders, as well as stutter and suicide on Science Direct, Springer, Google Scholar, and Scopus from 1985 to 2020. From among 321 papers searched, a total of 34 research papers were related to this study.

Results: According to the results, anxiety and social anxiety were the most common mental disorders in the stuttering population. Unfortunately, most studies on stuttering and mental disorders have been conducted on adults, while mental disorders, especially anxiety, most likely occur during adolescence. Findings on depression were very heterogeneous, accordingly, sometimes no difference was observed, and sometimes the rate of depression was found to be higher in the PWS than in the control group. It seems depression in PWS increases with aging. There is no adequate research on the relationship between suicide and stuttering, but a positive association has been established between suicide and anxiety as well as between social anxiety and depression.

Conclusion: The rate of anxiety and social anxiety was higher in PWS than in PWNS. We need more research on mental disorders in PWS because various psychological aspects, especially depression, have not yet been fully studied in people who stutter.

Keywords: Mental Disorder, Anxiety, Social Phobia, Depression, Suicide, Stuttering

Introduction

Stuttering is a disorder in the normal fluency and time patterning of speech [1]. Craig A (2002) showed that the prevalence of stuttering was about 1%, and its rate of incidence was 4-5% across the entire life span in the state of New South Wales, Australia [2-4]. According to the results, the

prevalence of stuttering was 0.72% across the whole population, with the highest and lowest prevalence rates having been in younger children (1.4-1.44) and in adolescents (0.53), respectively. In addition, the male-to-female ratio ranged from 2.3:1 in younger children to 4:1 in adolescents, with the ratio of 2.3:1 registered across all ages. Household members were also interviewed by

asking whether anyone in the household had ever stuttered. If the answer was 'yes', the same corroborative questions would be asked. These data along with the prevalence data provided an estimate of the incidence or risk of stuttering, which ranged from 2.1% in adults (21–50 years old) to 2.8% in younger children (2–5 years old), and to 3.4% in older children (6–10 years old). In addition, the prevalence of total speech disorders was 14.8% in the Iranian community, among whom 13.8% had a speech sound disorder, 1.2% had the stuttering disorder, and 0.47% had a voice disorder [5].

Negative consequences of stuttering start from age 4-5 and continues throughout the life [6, 7]. These problems become more complex in adolescence, which include anxiety, social communication, and educational problems [8, 9]. People with stuttering, due to the listeners' negative reactions and negative attitude to their speeches, demonstrate avoidance behaviors, anxiety, aggression, with conflicts existing in most of them [10, 11]. These negative experiences lead to the feelings of embarrassment, shame, and lack of academic achievement. The probability of having psychological, behavioral, and emotional disorders, especially anxiety, is higher among people who stutter [12–14].

The psychosocial aspect of stuttering is one of the major components of this disorder that needs special attention in the course of treatment. Negative thoughts and reactions against stuttering start from childhood when a child begins to notice their speech differences [15, 16]. Negative attitudes towards communication and even the "self" develop when a child experiences stuttering and stigmatization in the society. Stuttering is accompanied by the destructive feelings of frustration, anger, guilt, and humiliation [17]. Because of social stigmas, PWS could have a lower chance for employment and higher education [18].

The degree of the impact of stuttering on a person's life differs among individuals. Some people encounter serious problems with communication competence, self-confidence, romantic relationships, and personality attributes [19–21]. The effects of stuttering on personality development have been studied in three countries, including Germany, Australia, and Iran. Based on these studies, PWS has a higher agreeableness. Jafari et al (2015) argued that the higher level of agreeableness in PWS would probably be a self-defense mechanism against being bullied and teased [20]. This study showed the importance of social stigmatization in personality development,

thereby exerting an effect on many aspects of an individual's life.

Because of the aforementioned impacts of stuttering on PWS's everyday life and psychological profiles, many studies have been carried out on mental disorders among PWS.

Per A. Alm (2014) reviewed several studies on comparing mental disorders between PWS and PWNS [22]. In this study, no significant differences were observed between PWS and PWNS in shame, sadness, social phobia, social functioning, as well as psychological and emotional activities; however, stronger impulsive behaviors and greater lack of control were observed among PWS than in PWNS. Their review of studies revealed that negative social assessments were among the major reasons for differences between PWNS and PWS. In addition, their review showed that the cognitive behavioral therapy (CBT) was one of the most effective treatments for mental disorders in PWS, which showed a clear effect on social anxiety and psychological wellbeing in this population. However, this study did not show any effects on speech fluency. Another result from their review was that improved fluency after the fluency shaping therapy was associated with anxiety reduction. Studies on psychological treatments focusing on anxiety have verified their positive effects on psychological wellbeing but have shown little or no effect on speech fluency [22].

Kefalianos, Onslowcm Blockd, Menziesc, and Reilly (2012) found out that stutterers' temperament would not lead to anxiety [23]. Some stuttering preschool children experience negative peer responses and difficulties in social interactions with their peers as a consequence of their stuttering [10]. Although results of research on adaptability are not the same, new research using observations rather than parent assessment questionnaires suggests that CWS have lower adaptability and a lower capacity for regulating their attention than CWNS [23].

Iverach, O'Brian, Kefalianos, and Rreilly (2013) reviewed several studies to determine the scope of research on the timing of anxiety onset in stuttering. Researchers claim that anxiety in stuttering people might increase over time until exceeding normal limits in adolescents and adults [24].

Iverach and Rapee (2013) reviewed some studies to determine the level of social anxiety in people who stutter and to suggest that research accomplished prior to the turn of the century produced evidence of raised anxiety in people who stutter [25]. Because of the proven impact of stuttering on a person's life, psychosocial wellbeing, and the quality of life, studying mental

disorders in PWS is of great importance in treating stuttering. Against this background, this study aims to review three common mental disorders, including anxiety, social phobia, and depression among PWS [25].

Materials and Methods

In this paper, to answer an old question, there was a need for a wide range of relevant papers. To this end, we searched keywords with stutter, including stutter and anxiety, stutter and social anxiety, stutter and depression, as well as stutter and mental disorders and suicide on ScienceDirect, Springer, Google Scholar, and Scopus from 1985 to 2020. A total of 34 relevant research papers were selected from among 321 papers for this study. For anxiety, social anxiety, and depression, 13, 12, and 9 papers were selected, respectively.

Results

Anxiety: Anxiety is probably the most common mental disorder among people who stutter [24, 26]. The majority of studies on mental disorders in PWS have been conducted on anxiety. Given the

role of speaking in academic achievement and job success, it is evident that anxiety is common in stutterers [27, 28]. Despite numerous studies, the cause-effect relationship between stuttering and anxiety has not been clearly explored [8, 29]. The results obtained in research on anxiety among children with stuttering are equivocal [24]. Some research reports anxiety as a common disorder among children and adolescents who stutter [30–33], yet some other research does not establish this relationship [34–38]. Boys tend to hide their anxiety about their stuttering [36]. This could be one of the reasons for the dual results of research on stuttering anxiety, with the worse outcome being produced perhaps due to the fact that these people are less likely to undergo treatment [39–42]. Unfortunately, most research on stuttering and anxiety has been carried out on adults, while the most likely occurrence period of mental disorders, especially anxiety, is during adolescence [43]; however, in few studies on mental disorders in people with stuttering during adolescence, anxiety has been considered one of the most common psychiatric disorders [31–33, 44].

Table 1. A summary of reviewed research studies on anxiety and stuttering

Study	Age range	n	Anxiety measure(s)	Findings
Andrews, G., & Harris, M. (1964). The syndrome of stuttering	9–11 years	80	General Anxiety scale for children	Null; there were no differences in anxiety compared with age-matched non-stuttering controls.
Blood, G., & Blood, I. (2007). Preliminary study of self-reported experience of physical aggression and bullying of boys who stutter: Relationship with increased anxiety	11–12 years	18	RCMAS	Stuttering young people had significantly higher anxiety levels than age-matched non-stuttering controls.
Blood, G., Blood, I., Maloney, K., Meyer, C., & Qualls, C. (2007). Anxiety levels in adolescents who stutter	12 -18 years	36	RCMAS	Stuttering young people experienced anxiety within normal limits, but higher than those in age-matched non-stuttering controls.
Blood, G., Blood, I., Tellis, G., & Gabel, R. (2001). Communication apprehension and self-perceived communication competence in adolescents who stutter	13-18 years	39	PRCA	Stuttering young people had significantly higher levels of communication apprehension (anxiety) than age-matched non-stuttering controls.
Craig, A., & Hancock, K. (1996). Anxiety in children and young adolescents who stutter	9-14 years	96	STAIC	Null; no differences were observed in anxiety compared with age-matched non-stuttering controls, and anxiety levels were within the average range according to the normative data.
Craig, A., Hancock, K., Chang, E., McCready, C., Shepley, A., McCaul, A., Costello, D., Harding, S., Kehren, R., Masel, C., et al. (1996). A controlled clinical trial on stuttering in elderly people	9–14 years	97	STAIC	Null; stuttering young people showed anxiety levels in an average range according to normative data.

Davis, S., Shisca, D., & Howell, P. (2007). Anxiety in speakers who persist and recover from stuttering	10 years–16 years and 7 months	17	STAIC	Stuttering young people had higher levels of state anxiety than age-matched recovered stutterers as well as age-matched non-stuttering controls.
Erikson, S., & Block, S. (in press). The social and communication impact of stuttering on adolescents and their families	11–18 years	36	PRCA	The majority of stuttering adolescents experienced high levels of communication apprehension.
Gunn, A., Menzies, R. G., O’Brian, S., Onslow, M., Packman, A., Lowe, R., Block, S. (2013). Axis I anxiety and mental health disorders among stuttering adolescents	12–17 years	37	RCMAS, FNE, the computerized voice version of the Diagnostic Interview Schedule for Children	Stuttering adolescents were diagnosed at least once with a mental disorder, with the majority of these diagnoses having involved anxiety.
Hancock, K., Craig, A., McCreedy, C., McCaul, A., Costello, D., Campbell, K., & Gilmore, G. (1998). A two- to six-year controlled trial on stuttering outcomes in children and adolescents	11–18 years	62	STAIC	Null; the trend for recovered stutterers or those with very low levels of stuttering indicated reduced anxiety over time according to normative data.
Mulcahy, K., Hennessey, N., Beilby, J., & Byrnes, M. (2008). Social anxiety, severity, and typography of stuttering in adolescents	11-18 years	19	STAI, FNE	Stuttering young people had significantly higher levels of anxiety than age-matched non-stuttering controls.
Ortega, A. Y., & Ambrose, N.G. (2011). Developing physiologic stress profiles for school-age children who stutter	6–11 years	9	Salivary cortisol measures	Null; no differences were observed in cortisol levels between stuttering children and normative data.
Van der Merwe, B., Robb, M. P., Lewis, J. G., & Ormond, T. (2011). Anxiety measures and salivary cortisol responses in preschool children who stutter	3 years and 3 months–4 years and 11 months	7	Salivary cortisol measures, PAS	Null; no significant differences were observed in anxiety between stuttering preschoolers and age-matched non-stuttering controls.

FNE: Fear of Negative Evaluation Scale (Watson & Friend, 1969); PAS: Preschool Anxiety Scale (Edwards et al., 2010); PRCA: Personal Report of Communication Apprehension; RCMAS: Revised Children’s Manifest Anxiety Scale (Reynolds & Richmond, 2008); STAI: State-Trait Anxiety Inventory (Spielberger et al., 1983); STAI-C: State-Trait Anxiety Inventory (Spielberger, 2010).

Social phobia: Social anxiety is a chronic mental disorder characterized by severe fear from others in social situations or by fear from one’s performance being assessed by others [1]. The prevalence of social anxiety in the US adult community is 8-13%, which is one of the major psychiatric disorders in the world [10, 45–47]. It is a common disorder in PWS [28, 48–51], which also exists in teenage stutterers [24]. This disorder could also be observed among children aged 7 to 12 [19]. People seeking treatment for stuttering are more likely to show symptoms, such as social phobia [52]. In some studies, 22-60% of PWS suffered from social anxiety [25, 53–56]. Suffering

from social anxiety could negatively affect treatment outcomes [28].

Results of a comparison made between stuttering and non-stuttering individuals indicate that the probability of being diagnosed with social phobia, anxiety, and the general anxiety disorder is several times higher in PWS than in PWNS. Future research should assess the impacts of these mental disorders on treatment outcomes [28]. Shame, guilt, poor social interactions, and fear of speaking, especially among strangers, are common problems facing stuttering people [57–62]. It seems that social anxiety exacerbates in stuttering people with childhood experiences, communication problems, and negative outcomes.

In addition, their entire life could be a source of social anxiety. Social anxiety intensifies behavioral weaknesses in social situations and reduces social interactions [63–65].

There are many reasons for the connection between stuttering and social anxiety. Stuttering is accompanied by negative social factors and psychological disorders in life [66, 67]. These negative consequences start in early childhood, for children are prone to being ridiculed, harassed, avoided, bullied, and teased by their peers [68–70]. Negative consequences are intensified during school hours due to more social interactions and the need for speaking to be included in the community. Against this background, stuttering people are more likely to be rejected by peers and to be excluded from the society and social connections [71–73].

Not surprisingly, most stutterers report that stuttering exerts lots of negative effects on their academic performance during the academic year as well as on their social and emotional performance [74–76]. There are many reasons why stuttering people experience a high level of social anxiety, and there are many ways for

growing social anxiety [77–79] during childhood and adolescence [80, 81]. Clinical psychologists suggest many social, environmental, biological, genetic, and psychological reasons for the sources of social anxiety, which in combination show the complexity of the disorder [82–84].

Some of these factors, such as social factors, could be stronger in PWS. CWS could be more exposed to negative reactions from peer groups, such as ridicule, rejection, and harassment [77, 81, 84]. These reactions reduce social interactions, age-appropriate social interactions, and social skills, yet they increase the chance of experiencing social anxiety [81].

There is not enough research on examining factors leading to the emergence and growth of social anxiety in stuttering people. The main problem to be assessed is that PWS could become more anxious when they are taken into consideration, and the other major problem is that they react when they are evaluated. They might not react under normal conditions; therefore, this point must be taken into account when evaluating social situations in PWS [85].

Table 2. Details of studies included in the meta-analysis that compared trait anxiety in adults who stutter (PWS) with non-stuttering controls (NSC); Sex is shown (M = male; F = female); in addition, the mean age or the age range has been shown in years.

NSC	Mean(SD)	PWS(N)	NS(N)	Anxiety measure	Mean(SD)
Bonifacio (1974)	35/M/26.2	35/M/25.0		Spielberger State-Trait Anxiety Inventory	44.6(11.8) / 36.3(8.5)
Molt and Guilford (1979)	15/13M/16-55	15/13M/16-55		Spielberger State-Trait Anxiety Inventory	36.7(10.6) / 34.7(8.3)
Peters and Hulstijn (1984)	24/20M/18-37	24/19M/18-37		Amsterdamse Vragentlijst N Scale	65.4(28.7) / 59.4(26.3)
Craig (1990)	102/82M/18-75	102/82M/18-75		Spielberger State-Trait Anxiety Inventory	43.1(11.0) / 35.8(7.0)
Miller and Watson (1992)	38/M/16-68	38/M/16-68		Spielberger State-Trait Anxiety Inventory	35.7(11.4) / 33.2(9.0)
Blood et al. (1994)	11/M/19-36	11/M/19-33		Spielberger State-Trait Anxiety Inventory	34.8(6.7) / 35(4.5)
Mahr and Torosian (1999)	22/18M/27-51	100/50M/		Self-Rating Anxiety Scale	44.5(8.9) / 33.8(5.9)
Craig et al. (2003)	63/M/38.4	102/82M/18-75		Spielberger State-Trait Anxiety Inventory	38.5(9.6) / 35.8(7.0)
Ezrati-Vinacour et al. (2004)	47/M/18-43	47/M/18-43		Spielberger State-Trait Anxiety Inventory	42.9(8.8) / 34.6(7.8)
Iverach et al. (2009)	94/72M/18-73	102/82M/18-75		Spielberger State-Trait Anxiety Inventory	41.9(10.4) / 35.8(7.0)
Blumgart et al. (2010)	200/151M/45.7	200/106M/47.1		Spielberger State-Trait Anxiety Inventory	39.7(12.0) / 33.9(9.0)
Iverach et al. (2018)	82/61m/18-80	193/158m/18-80		DSM- 5	64.1(35.8) / 45.4(25.1)

Depression: The correlation between depression and stuttering has not yet been thoroughly investigated, and research on this subject is incomplete. However, the comparison of mean

depression scores in PWS and PWNS shows that the mean depression scores for stutterers are higher [86–88]. In addition, depression could occur in PWS, based on DSM 4 (IV-TR) [89]. There is a

strong positive correlation between depression and anxiety [90]. Besides, the relationship between depression and stuttering has been shown in past research [88].

Depression itself has several types, with their common features being sadness, lack of pleasure, attenuated appetite, reduced or increased sleep, and impaired functions [1]. Research on depression in stutterers has received contradictory results as well. Although some studies have reported high levels of depression in stutterers [91–93], others have failed to prove PWS suffer from more serious depression than their peers [94, 95]. In Miller and Watson's study, the average depression scores for stutterers were higher than those for non-stutterers. Research reports that people who stutter are more likely to suffer from mood disorders and depression [92]. However, research reported a negative correlation between stuttering and depression [96, 97].

Some studies used other tests to measure depression. Research, using the Reynolds Adolescent Depression Scale, showed no

significant differences among stuttering and non-stuttering adults in depression between the two groups [93, 98].

In contrast to research conducted in Spain, stuttering students showed more significant symptoms of depression than the non-stuttering ones. In this study, clinical diagnosis was not used, but a self-report questionnaire was utilized to measure depression [10, 99].

Some research also used the personality inventory to measure depression in stutterers. Research using the Minnesota Multiphasic Personality Inventory [100] and MMPI–2 [101] showed that people who stutter had significantly higher scores of depression than those not stuttering [102, 103].

In summary, the relationship between depression and stuttering is not still well defined, with one reason for which being the non-use of an appropriate unit for measuring depression; the other reason would be the small number of the research population used in clarifying the connection between depression and stuttering [104].

Table 3. Details of studies included in the review having compared trait depression in adults/adolescents who stutter (PWS) and non-stuttering controls (NSC); sex breakdown is shown (M = male; F = female); in addition, the mean age or the age range have been shown in years.

-	N /Age	Measure	Result
Peter Hays¹ L. Leigh Field. (1989)	-	Beck Depression Inventory	No difference was observed between PWS and PWNS.
Susan Miller and Ben C. Watson (1992)	-/Adults	Beck Depression Inventory	PWS suffer from stronger depression than PWNS.
Melissa A. Bray et al. (2003)	-/Adolescents	DSM-4	There is no difference between PWS and PWNS (adolescents).
Lisa Iverach et al. (2010)	92 PWS 920 PWNS/Adults	DSM-4	PWS suffer from stronger depression than PWNS.
Yong Li Foo (2014)	214 PWS 4280 PWNS	CID-9	PWS suffer from stronger depression than PWNS.
Anthony Gunn et al. (2014)	20 PWS (12-14 years) 17 PWS (15-17 years)	DSM-4	Older adolescents (15-17 years) were reported with stronger depression than younger adults (12-14 years).
Ashley Craig et al. (2015)	200 PWS/Adults	SCL-90	Adults have a higher rate of depression than the normal population.
Lisa Iverach et al. (2016)	102 PWS(11-17)/Adolescents	Children's Depression Inventory	Older adolescents got higher scores than younger adolescents.
Yvonne Tran et al. (2017)	129 PWS/Adults	SCL-90	No difference was observed between PWS and the normal population.

Suicide: Research on the connection between suicide and stuttering is not adequate. However, studies on this subject are contradictory. Simon (2009) claims that stuttering is not considered as a suicide risk factor [105]. In contrast, Li, Chau, Yip,

and Wong (2014) claim that stuttering could be effective in suicide attempts [106]. Anderson (2016) reports people who stutter have several social problems, such as isolation [107]; in addition, there is a relationship between stuttering

and depression [108-110], between stuttering and anxiety [111, 112], and between stuttering and social anxiety [113–115]. Besides, the connection between suicide, depression, anxiety, social anxiety, and the quality of life has been established. Thus, people who stutter probably have suicide risk factors, such as depression, anxiety, and social anxiety. There is no study on the assessment of suicide plans and attempts among stuttering people.

Discussion

Stuttering could disturb healthy and pleasurable speech as well as verbal communication in a community. However, stuttering problems in many cases are not limited to speech problems, yet they exert negative effects on mental health among PWS. Stuttering could be accompanied by several disorders, which make treatment more difficult. Although much attention has been paid to mental disorders in stutterers for several decades, many psychological aspects have not yet been fully covered in stutterers. The majority of studies on psychological disorders in stutterers have been related to anxiety and social phobia. It seems the most common psychological disorders are the same perhaps because stuttering starts in childhood and is strengthened by the environment. According to Iverach L (2014), the high level of anxiety and social anxiety in stutterers indicates that the diagnosis and treatment of such disorders during childhood and adolescence have not been fully emphasized, with these disorders becoming more severe with aging [25]. Accordingly, it could be useful to help diagnose and treat these psychological disorders in PWS during childhood to improve their mental health in adulthood. The likelihood of depression increases with aging. Although there is no clear evidence about the relationship between stuttering and depression, there are conflicting reports indicating it seems necessary to focus future research on depression. To produce clarity in this case, diagnostic interviews could be more helpful than questionnaires. Mental health problems in PWS could have negative effects on interpersonal relationships, vocational relationships, academic achievements, and romantic relationships; therefore, treatment should not be limited to speech fluency techniques. Although higher fluency could reduce the severity of mental disorders in part, it would be better to ask mental health professionals to diagnose and treat these disorders because in many cases these mental disorders could be left unaffected after treatment. Most studies on psychological disorders in

stutterers have been done by speech-language pathologists. Therefore, the majority of them have focused on evaluating disorders using questionnaires, yet few studies have been conducted on treating mental disorders in PWS. Therefore, for the more proper diagnosis and timely treatment of disorders in stutterers, it would be better to ask for mental health professionals' services alongside stuttering treatments administered by speech-language pathologists. Stuttering adults are not willing to be informed on the diagnosis of other mental disorders in addition to stuttering; thus, their responses to the questionnaires could not be valid. Mental health professionals could raise the validity of responses to questions through using therapeutic communication; thus, their diagnosis could be more accurate. There are conflicting results about the level of mental disorders in people who stutter so that in some studies there are no significant differences between stutterers and non-stutterers. Two major reasons could be given for this issue, including the non-use of a unique evaluation tool and clinical interviews as well as the difference in the mental health level of the studied populations. Mental health and attitudes towards mental disorders are not similarly important in different societies. Therefore, studies on mental disorders in people who stutter could not yield the same results in different societies. An example is the well-designed study on personality in PWS living in Iran, which found no high level of neuroticism in PWS, which helped reduce stigmatization towards PWS [20, 21]. These studies show the high level of agreeableness in PWS; however, the high level of agreeableness is not always beneficial. The results of the study by Jafari et al could be used by therapists to address high levels of agreeableness in therapies and to help clients adjust and keep an optimal level of agreeableness in different situations to avoid exploitation by others and to improve their mental health. Unfortunately, there is not enough research on studying suicide among stutterers. However, the positive relationship between suicide and common mental disorders in stutterers has been established. For future studies, it is recommended that suicide be studied during adolescence among stutterers.

Conclusion

In this review study, high prevalence of three mental disorders (anxiety, social phobia, and depression) was shown in individuals with developmental stuttering. The results also indicate that anxiety and social phobia are common among people who stutter, and in many studies, the

average of depression was higher in PWS than in the normal population. It is recommended that more research be conducted on suicide among PWS in the future. In addition, therapists must be encouraged to address mental health issues in this group of people. Besides, it is recommended that PWS be referred to relevant experts for the diagnosis and treatment of mental health disorders.

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