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Depression and Individuals with Hearing Loss: A Systematic Review

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Abstract

Introduction: Hearing loss is a silent disability that reduces the hearing acuity of an individual and makes it difficult to perceive or interpret auditory signals. Persons with hearing loss are a heterogeneous group comprising of diverse and complex psychosocial characteristics of individuals who does not readily enjoy the empathy/sympathy received by other forms of disabilities that is readily visible. Hearing loss usually predisposes sufferers to resentment, hostility, rejection and subtle denial resulting to a cascading effect on socio-emotional development and could ultimately lead to depression.

Objective: This study assessed the extent and trend of studies on depression among individuals with hearing loss which are domiciled online data bases and to establish the strengths and limitation of such studies in Nigeria.

Methods: To conduct this systematic review, a thorough search across multiple databases was undertaken, based upon five search facets ("depression", "depressive symptoms", "hearing loss", "deaf" and "hard of hearing"). Five electronic databases, key texts and references in the articles identified were scrutinized for article that have in their title "depression" and "hearing loss".

Results: Data gathered revealed that hearing loss is significantly associated with depression while the onset and degrees of hearing loss poses to be a major correlate of depressive symptoms among the elderly. The study revealed that there is a dearth of studies which distinguished between communication options, parental involvement, socioeconomic status or birth order of the Deaf respondents/participants in relation to depression in their studies.

Conclusion: There is a great tendency for depression among the Deaf and/or hard of hearing which may as well instigate suicidal thoughts. This study observed a dearth of studies on depression and its associated symptoms among the Deaf and/or hard of hearing in Nigeria and the Sub-Sahara Africa. Therefore, psychologist and other mental health workers should not take for granted any depressive symptoms among persons with hearing loss.

Keywords: Hearing loss; Depression; Mental health

Introduction

Mental health is a condition that affects the overall wellbeing of an individual. It reflects a function of satisfaction to an individual or the society. In other words, it predetermines how an individual responds to societal issues, inter and intrapersonal relationship at a level which is considered as norms. However, when mental health status raises a concern and becomes a threat to another or the entire populace then its associated effect can be disastrous most especially at adolescence and adulthood [1]. Based on Sommers' observation [1], the issue mental health among individuals with hearing loss whose disability becomes evident in context where communicative skills are needed is of great concern. Hearing loss is an umbrella term that includes those who are Deaf and/or Hard of hearing. In other words, inability to respond to auditory-verbal stimulus as being done by peers with normal hearing has a pervasive influence on psychosocial development of individuals with hearing loss. The most significant consequence of growing up with hearing loss is the difficulty in perceiving others, and this limitation has direct effect on the ability to develop speech and language skills which is the essential for communication with a cascading effect on every aspect of emotional and social development, family interconnectedness, social competence and over all perceived quality of life [2].

In recent times, persons with hearing loss are confronted with more behavioral and social problems than their hearing peer [3,4], they often experiences a greater deal of psychosocial challenges with reduced satisfaction, losses interests in physical and recreational activities and with increased rate of being withdrawn or isolated [5,6]. Moreover, access to incidental learning is often restricted because of difficulties in communication and the hearing loss per se. These individuals may also display difficulties in abstract thinking and problem-solving skills [7], ability to form peer relationships, low self-esteem [8] and ultimately increased psychological distress [9]. Due to the aforementioned, individuals with hearing loss are at risks of health and environmental hazards, more susceptible to social maladjustment, poor quality of sleep and likelihood of internalizing depressive symptoms when compared to hearing peers [10].

Depression, according to the World Health Organization [11], is regarded as a common mental disorder affecting an individual with significant depressed mood, displeasure, decreased energy, feelings of guilt and reduced self-worth, disturbed sleep, loss of appetite, and poor concentration. Moreover, symptoms of anxiety are often linked with depression which could lead to substantial comorbid impairments that may negatively influence everyday responsibilities. Rostami et al. noted that tearfulness, slowed responses, weight loss, eating as well as sleeping disorders, restlessness, loss of interest or pleasure in most activities or withdrawal from family, friends and colleagues are indicative of depressed individual [12]. However, the only distinguishing factor

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between persons without hearing loss and those who are Deaf and/or hard-of-hearing in response to disclosure of their depression to a 'helpmate' is that communication barriers substantially affects how the latter are less likely to reveal and explain issues bordering their mind to family members, physician, counselors and mental healthcare professionals [13].

Based on the DSM-IV criteria, depressive disorders are considered as mental illnesses associated with increased psychological conditions characterized by inability to experience pleasure, feeling of despair which can substantially increase according to age across a population [14,15]. In Sub-Sahara Africa, particularly in Nigeria, issues of depression and other mental health problems is on the increase most particularly among persons with hearing loss who are often confronted with challenges posed by communication difficulties, poverty, inequality, unemployment as well as marital instability. However, there seems to be lack of evidenced based studies on the incidences and prevalence of depression and depressive symptoms among individuals with hearing loss in Nigeria which may necessitate the formulation of framework to improving the quality of life and psychosocial wellbeing of individuals with hearing loss. Whereas, studies in developed countries have reported incidences and issues of depressive symptoms among communities of those with hearing loss. For instance, Leigh and colleagues observed that a greater number of Deaf students (irrespective of their age or gender) of more than 50% exhibit mild levels of depressive symptoms when compared with their hearing counterparts [16]. Similarly, using the Beck Depression Inventory – II on fifty-three Deaf College students, Leigh and Anthony-Tolbert noted found 26% of the students to be severely depressed at some point in life. However, the findings from the study of Leigh and Anthony-Tolbert did not reveal differences in depressive symptoms based on onset of hearing loss [17]. In their 5 year retrospective study, Black and Glickman observed a higher rate of depression among deaf patients compared to 8.8 percent in the hearing patients at Westborough State Hospital in Massachusetts, USA [18]. Among 523 adults with hearing loss in the Netherlands, de Graaf and Bijl [19] found about 30% rate of mental health problem among the adults with hearing loss that it was with the general population.

Depressive disorders at adulthood has a precursor from tender age most especially during adolescence [20,21]. Kim-Cohen et al. [22] in their study among 1,037 who were followed for 26 years found that only 25% of their participant experienced depression at adulthood while 75% of adults who met criteria for major depression, had earlier experienced depressive disorder in childhood or adolescence. Similarly, Lewinsohn et al. [23] noted that about 25% of previously depressed adolescents in their study among 274 adolescents had formerly reported depressive disorder during adolescence experienced had major depressive disorder in later years while another 25% experienced comorbid major depressive disorder. According to Moffitt et al. [24], the prevalence of major depressive disorders ranges from 10%-17% in early adulthood with more depressive symptoms among women than it may affect men while depression is relatively uncommon in pre-pubertal children in respect to gender and age [25]. In other words, the levels of depressive disorders starts too rise between 4-5% during early teenage year most especially among girls due to the pubertal symptoms which is much obvious than in boys [26] while discrepancies in rate of depressive symptoms among persons between ages 10 to 14 years of age has been found to vary considerably lower than adolescents who were between 15 to 19 years of age [27-29].

Among adolescents with hearing loss, studies of Van Gent et al. [30] observed that there is a higher incidence of psychopathology in children and adolescents who experiences a severe degrees of hearing loss [30] while Mejstad et al. also reported an association with gender (boys having more mental health problems than girls) [31]. Nevertheless, the specific age when this difference begins is controversial and other factors associated with depressive symptoms among adolescence seems to vary among different population [32,33]. The World health Organization [34] stated that depression is the leading cause of disability with a 50% higher rate of burden of depression among women than men. It is a condition that presents co-morbid disabling conditions for persons with hearing loss. However, a larger percentage of previous studies conducted among the population of individuals with hearing loss most especially in Nigeria and other Sub Sahara Africa have concentrated more on stress and psychosocial issues [35], academic achievement [36,37], speech and language development [38] while a few studies have been conducted on depression among individuals with hearing loss. Given the fact that individuals with hearing loss are more prone to having mental health problem due to their communication difficulties and endearing negative societal attitude experience by individuals with hearing loss. This study aim to assess the extent of studies on depression and depressive symptoms among persons with hearing loss which are domiciled in the open access. More so, this study will bring to the fore the strength of such studies among persons with hearing loss in Nigeria and other African countries.

Methods

A comprehensive search on articles in which 'depression' and 'hearing loss' or deafness and/or hard of hearing reflected in their title were identified and purposively selected for the study. More importantly, such article must be completed and published from January, 2006 up to May, 2016. The studies included in this review were identified by keyword searches of the PubMed database, Educational Resources Information Center (ERIC), Science Direct, Articles from Journal of Deaf Studies and Deaf Education, and the worldwide web using Google Scholar. Only articles written in English language was identified and considered for the study. The search included 'depression and hearing loss' as keywords. The search was expanded to include other keywords such as 'depressive symptoms and Deafness', 'depressive symptoms and Onset of hearing loss', 'depressive symptoms and hard of hearing'. Manual searches of reference lists of relevant articles and of theses and dissertations were also performed (Table 1).

Discussion

Hearing loss is an invisible disability that affects people of any age group from neonates to older adults. Hearing loss of any degree or configuration is capable of compromising communication, education, social functioning, and safety of the individual. It is the greatest handicap which revolves around the development of communication skills; however, because hearing loss is an invisible disability, it is easily ignored, especially if other, more dominant, health issues are also present. It may have serious consequences for speech, language and cognitive skills development [64]. Oyiborhoro noted that difficulties associated with hearing loss can extend beyond the academic area and are not uncommon in children's social and emotional development which can interfere with various emotional states even at adulthood [65]. However, at every stage of human development, persons with hearing loss experiences issues of isolation, rejection, dejection and hostile attitudes of the hearing peers which often lead to social isolation, poor self-concept, low self-esteem and ultimately depression which have adverse effect on deaf child's cognitive and socio-emotional development [66]. Studies have among persons with hearing loss found an increased

Author(s)	Year/Place of publication	Paper title	Type of study	Participants	Results
Zamora-Vega et al. [39]	2016	Association between depression and hearing loss in patients with type 2 diabetes	Cross-sectional analytical study	150 patients with type 2 diabetes (76% women and 34% men)	Patients with diabetes who experience hearing loss were greatly at risk of depression.
Lin et al. [40]	2016, Taiwan	Increased risk of sudden sensorineural hearing loss in patients with depressive disorders: Population-based cohort study	Review study	27 547 patients with newly diagnosed depressive disorders and 27 547 subjects without depressive disorders	The study revealed a depressive disorder among those with post-lingual sensorineural hearing loss while co-morbidities increased the risk of depressive symptoms.
Hsu et al. [41]	2016, Taiwan	Increased risk of depression in patients with acquired sensory hearing loss: 12 year follow-up study	Observational Study	5043 patients with sensory hearing loss and 20,172 patients without sensory hearing loss	The study revealed that SHL was a risk factor irrespective of sex, age and comorbidities among Taiwanese adults.
Choi et al. [42]	2016	Association of using hearing aids or cochlear implants with changes in depressive symptoms in older adults	A prospective observational study	63 participants using hearing aids and 50 others who were fitted with cochlear implants.	There was a significant decrease of depressive symptoms at 6 months after treatment for patients receiving cochlear implants and hearing aids while improvement was observed at 12 months for those fitted with cochlear implants.
Tseng et al. [43]	2016, Taiwan	Risk of depressive disorders following sudden sensorineural hearing loss: A nationwide population-based retrospective cohort study.	A retrospective cohort study	A total of 1717 SSNHL patients and 6868 individuals without SSNHL	The results found that patients with SSNHL were more at risk for depressive disorders especially among participants younger 60 years of age.
Castiglione et al. [44]	2016	Aging, cognitive decline and hearing loss: Effects of auditory rehabilitation and training with hearing aids and cochlear implants on cognitive function and depression among older adults.	Quasi-experimental study	105 with hearing impairment and 20 without hearing loss	There was improvement after auditory training on memory tasks, level of depression and cognitive status scores. Cochlear implants or hearing aids was effective among older adults (median age of 74 years) with different degrees of hearing loss in terms depression and cognitive performance
Santos et al. [45]	2015	The effects of unilateral adaptation of hearing aids on symptoms of depression and social activity constraints of elderly	Survey study	13 individuals who were between 60 and 90 years old	Results showed reduced social activity constraints and depression symptoms among those with unilateral hearing aid adaptation.
Dawes et al. [46]	2015, United Kingdom	Hearing loss and cognition: The role of hearing aids, social isolation and depression	Correlational study	164,770 respondents aged 40 to 69	The study recorded better cognition, independently of social isolation and depression among hearing aid users.
Li, et al. [47]	2014, USA	Hearing impairment associated with depression in US adults, National Health and Nutrition Examination Survey 2005–2010	Descriptive survey study	18318 persons aged 18 years or older.	Hearing impairment and depression among US adults of all ages was significantly associated, especially among women and those younger than 70 years.
Rostami, et al. [12]	2014, Iran	Depression and Deaf adolescents: A review	Review study		Depressive symptoms are more prevalent in the deaf than in hearing students but more severe depression is not.
Gomaa, et al. [48]	2014	Depression, anxiety and stress scale in patients with tinnitus and hearing loss	Evaluative study	100 patients suffering from subjective tinnitus, 45 patients were suffering from hearing loss only and 50 healthy subjects suffering from tinnitus or hearing loss (control group).	Depression affects more males than it does to females.
Prakash et al. [49]	2013, India	Measuring levels of stress and depression in Mothers of children using hearing aids and cochlear implants: A comparative study	Comparative study	50 Mothers of children with bilateral severe to profound sensorineural hearing loss	The findings of the study reveal high stress levels and depression among mothers of children with hearing loss who uses amplification devices but levels of stress and depression comparatively higher in mothers of children using hearing aids than cochlear implants users.
Kiely et al. [50]	2013, Australia	Dual sensory loss and depressive symptoms: the importance of hearing, daily functioning, and activity engagement	Descriptive survey study	1611 adults aged between 65 and 103 years.	Higher levels of depressive symptoms were associated with onset of hearing loss.
Mener et al. [51]	2013, USA	Hearing Loss and Depression in Older Adults	Descriptive survey study	1029 adults aged 70 through 79 years	Hearing aid use is independently associated with reduced odds of major depressive disorder and depressive symptoms.
Chen et al. [52]	2013	Mental health in adults with sudden sensorineural hearing loss: An assessment of depressive symptoms and its correlates	Correlational study	147 patients admitted for sudden hearing loss and diagnosed with SSNHL	Recovery from SSNHL significantly decreased depressive symptoms. Tinnitus increases the rate of depressive thoughts and feelings, reduces personal relationships.

Garnefski et al. [53]	2012	Cognitive coping and goal adjustment are associated with symptoms of depression and anxiety in people with acquired hearing loss	cross-sectional study	119 individuals with moderate to profound AHL	The study revealed catastrophizing ways of coping were related to the symptoms of depression and/or anxiety among the participants in the study.
Pronk et al. [54]	2011	Prospective effects of hearing status on loneliness and depression in older persons: Identification of subgroups	Descriptive survey research	Sample sizes were 996 (self-report (SR) analyses) and 830 (speech-in-noise test (SNT) analyses)	Both hearing measures showed significant adverse associations with both loneliness measures. However, stratified analyses showed that these effects were restricted to specific subgroups. No significant effects appeared for depression.
Bernabei et al. [55]	2011, Italy	Vision and hearing impairments are associated with depressive-anxiety syndrome in Italian elderly	Correlational study	The study population consisted of 7389 participants not affected by dementia	The findings suggest that sensory impairment in older adults can increase their probability of experiencing depressive and anxiety syndrome.
Acar et al. [56]	2011	Effects of hearing aids on cognitive functions and depressive signs in elderly people	Single-arm interventional study	34 elderly individuals with hearing impairment	Patients using hearing aids had a significant improvement of the psychosocial and cognitive conditions after 3 months of interventions, i.e., the social communication and exchanging information.
Millán-Calenti et al. [57]	2011	Relationship between sensory hearing loss and depression in elderly people: A literature review	A review study		Quality of life of elderly persons with hearing loss was hampered by communication difficulties which affected the social participation and communication skills.
Theunissen et al. [14]	2011	Depression in hearing-impaired children	Descriptive survey research	27 children with cochlear implants, 56 children with conventional hearing aids, and 117 normally hearing children.	Depressive symptoms were reported more among children with hearing loss than their normally hearing peers.
Lee et al. [58]	2010, China	Hearing impairment and depressive symptoms in an older Chinese population	Cross-sectional study	914 Community-dwellers who were aged 60 years	An association was found between depression and hearing loss in older Chinese.
Sahli et al. [59]	2009	Depressive emotioning in adolescents with cochlear implant and normal hearing	Quasi-experimental study	30 adolescents with cochlear implant between the ages of 12-19 while 60 adolescents with hearing loss formed the control group in the study	The study found that depressive emotioning was lower for adolescents who had preschool education, siblings, high socioeconomic status. On the other hand, the birth order as well as father's occupation had little effect on the level of depressive emotioning among children with cochlear implant.
Masud-ul-haq et al. [60]	2008, Pakistan	Deafness and depression	Survey study	A total of 200 patients between the ages of 10 years and 80 years over a period of five years from Jan 2003 to Jan 2008 were evaluated and investigated.	The study observed that depressive symptoms were noticed after six months of deafness. Although, 14% of the respondents had evidence of moderate depressive symptoms.
Kushalnagar et al. [61]	2007, USA	Intelligence, parental depression, and behavior adaptability in deaf children being considered for cochlear implantation	Correlational study	46 severely to profoundly deaf pediatric patients at the Texas Children's Hospital in Houston, Texas	Children with lower intelligence and higher parental depression appear to be at risk for behavioral and socialization difficulties.
Zazove et al. [62]	2006, USA	Assessment of Depressive Symptoms in Deaf Persons	Descriptive survey	71 Deaf from southeastern Michigan.	Depression had correlation with reading comprehension, social relationships and home factors but not with parental hearing status or presence medical conditions (including a history of depression).
Kvam et al. [63]	2006, Norway	Mental Health in Deaf Adults: Symptoms of Anxiety and Depression Among Hearing and Deaf Individuals	Survey study	51,975 individuals who are Deaf and hearing aged 20 years or more participated in the study	Deaf individuals were highly vulnerable to depression and other mental health problems than participants without hearing loss.

Table 1: Studies of depression among individuals with hearing loss.

rate of depressive symptoms especially when hearing loss is co-morbid with sexual or physical abuse, illness or additional disability, as well as feeling ostracized from family [40,48,63].

The Deaf individuals interviewed in the study of Sheppard and Badger were overwhelmed by the feeling of isolation as children because there was no common language within their families, hence their ability to acquire fundamental social skills for later life were hampered, low self-esteem manifested and suicidal thoughts became frequent [67]. For instance, Catherine Edeh, a Nigerian Deaf who was recently called to bar during an interview told Ben-Nwankwo that:

"After I became deaf and yet to learn sign language or join the deaf community, there were times I would feel too bitter, especially after seeing some of my old playmates who are that time were avoiding me out of ignorance. When I got so humiliated or stigmatized, I would give in to self-pity which bred frustration and on very few occasions, gave way to the thought of committing suicide." [68]

Just like Catherine, many Nigerians with hearing loss lives with frustration and varying degrees of depression with occasional suicidal thought because of their experiences and peoples unwholesome attitude towards them. Moreover, their plight challenges are compounded by their inability to access rehabilitation services that could improve their quality of life. Communication barriers often make it difficult for individuals with hearing loss to discuss effectively with parent, psychologist and other health care providers while many mental health professional as well as peers and family members often overlook depressive symptoms and other mental health related issues among persons with hearing loss. Hence, they encounter difficulties in accessing mental health services. It is quite unfortunate that despite the plethora of research on depression, only a few have investigated the issues of depression or depressive symptoms among the Deaf and/or hard of hearing in the last decade even in the Sub-Sahara Africa. In fact, Nigeria which seems to have almost ten percent of her population as those living with hearing loss is yet to vigorously examine issues of depression among these set of minorities.

Conclusion

This review has highlighted the trend of research on depression and individuals with hearing loss. It has also brought to the fore, factors predispose depressive symptoms among the Deaf and/or hard of hearing which may as well instigate suicidal thoughts among persons with hearing loss. This study found no studies on depression and its associated symptoms among the Deaf and/or hard of hearing in Nigeria and the Sub-Sahara Africa based on the objectives of this study while studies conducted on this subject matter in other part of the world did not indicate if their studies involve Africans with hearing loss. As discussed above, people with hearing loss are not a homogenous group. Many of the studies considered in this study failed to extensively distinguish between different types of and degrees of deafness, communication options, parental involvement and well as socioeconomic status or birth order of the Deaf respondents/participants in their studies. Therefore, psychologist, psychiatrist, sign language interpreters and other professionals whose profession deals with individuals with hearing loss and mental health researchers should beam the light of future studies on depression and depressive symptoms among persons with hearing loss in Nigeria most importantly during this economic recession. Such future studies should take into consideration the diversities among persons with hearing loss that will provide empirical evidences and prevalence of depression and its symptoms among persons with hearing loss and in Africa. More importantly, studies should focus more on children and adolescents with post-lingual hearing loss while psychologist and other mental health workers should not take for granted any depressive symptoms among persons with hearing loss.

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