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Severity of Depression among Deaf and Hard of Hearing Adolescents in Selected Public Primary Schools in Nairobi County, Kenya.

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Abstract

Depression is a siginificant public health problem in the Unites States, affecting approximately 12.5% of Deaf and Hard of Hearing (DHH) adolescents (Bozzay, et al., 2017). According to Kim et al. (2017), DHH was one of the common disorders with prevalences of 22.7% worldwide. The objective of this study was to investigate the severity of depression among DHH adolescents in selected schools in Nairobi County, Kenya. The 64 perticipants aged 14-20 were recruited for the study using Socio-Demographic Questionnaire (SDQ) and Beck Depression Inventory (BDI-II). In addition, the frequency of severe depression among participants aged 14-16 was found to me more at 54.7%. Further, as regards gender distribution, the frequency of severe depression was higher among female participants at 37.1%. It was also noted to be higher among participants, whose level of study was in class three at 19.4%, and participants who lived with both parents at 33.3%, and participants whose parents were employed at 46.8%. This study concluded that depression should be of great concern to clinicians dealing with DHH adolescents in public primary pupils in Kenya.
Keywords: Adolescents, Depression, Deaf and hard of hearing, Hearing Impairment.

Introduction

World Health Organization (WHO) states that depression is the leading cause of disability with 50% higher rate burden of depression among women than men (WHO, 2018). Further, WHO (2019) published a report on the trend of DHH between 1985 and 2011. The report indicated that in 1985, when the global prevalence of DHH was first estimated, 42 million people, which is 0.9% of the world's population, had disabling hearing impairment. By 1995, the estimated number of DHH had more than doubled up to 120 million that is, 2.1% of the world's population. This comprised about 70 million adults and 8 million young individuals in developing countries. Approximately, 32 million were children younger than 15 years and of these, 7.5 million were younger than 5 years (Olusanya, Neumann & Saunders, 2014).

In Sub Saharan Africa, more than 1.2 million children aged between 5 and 14 years suffered from moderate to severe hearing loss in both ears mainly due to infections, lack of hygiene and treatment (Mulwafu, Kuper & Ensink, 2016). Apart from the estimated figure, 1.1 billion young people aged between 12-35 years were at risk of hearing loss due to exposure to noise in recreational settings. A study done in South Africa reported that there was high prevalence of Hearing Impairement (HI) and auditory pathology in the rural context in South Africa (Pullen, 2015). In Zambia, the prevalence of DHH was 11.5%,

WHO (2012) estimated that depression had affected 350 million people, which indicated that about 1 to 20 people have an episode of depression. Depression is a siginificant public health problem in the Unites States, affecting approximately 12.5% among DHH adolescents (Bozzay, et al., 2017). According to Kim et al. (2017), DHH was one of the common disorders with prevalences of 22.7% worldwide. In a study by Kim and others (2017), it was reported that 75% of the participants had major depression. Also, Adigun (2017) noted that 25% of DHH adolescents experienced major depression. Further, Watt and Devis cited by Rostami, Bahamani, Movallali & Vahid (2014) revealed that 50% 0f DHH adolescents had depression. The same study found 10% of the participants had severe depression (Rostami et al., 2014). A similar study by Dreyzehner and Goldberg (2019) found that 26% of DHH youth had severe depression. In Kenya, a prevalence study among DHH adolescents in public secondary schools showed the prevalence rate of 34.7% and specifically, among children and adolescents at 43.7% (Ndetei et al., 2008). A similar cross-sectional study done among DHH adolescents in Eastland, Nairobi Kenya showed the prevalence of depression at 59.1% and more severe among female participants.

Methodology

This study recruited 64 DHH adolescents that were screened using the researcher generated socio demographic questionnaires and Beck Depression Inventory (BDI-II). This instrument is a 21 item self-reporting inventory that measures severity of depression. Items1-13 assesses psychological symptoms while 14-21 assesses physical symptoms. The instrument evaluates mood, pessimism, sense of failure, self-dissatisfaction, guilty, self-dislike, punishment, self-

acquisition, suicidal ideas, crying, irritability, fatigue, loss of libido and insomnia. BDI-II is a relevant psychometric instrument that shows high reliability and capacity to discriminate between depressed and non-depressed subjects. The internal consistency is described to be 0.9 and test retest reliability ranges from 0.73-0.96 (Wang & Gorenstein, 2013). Total score of 0–13 was considered minimal range, 14–19 was mild, 20–28 was moderate, and 29–63 was severe depression.

Analysis

Table 1: Background Distribution of Socio-Demographic Characteristics at Baseline

Variables	Frequency	Percent
Participant's Age		
14 – 16	54	84.4
17-19	10	15.6
Participant's Gender		
Male	24	38.7
Female	38	61.3
Participant's Class of Study		
Class One	2	3.2
Class Two	5	8.1
Class Three	16	25.8
Class Four	13	21.0
Class Five	3	4.5
Class Six	1	1.6
Class Seven	12	19.4
Class Eight	10	16.1
The caregiver the participant lives with		
Both Parents	35	55.6
Father alone	3	4.8
Mother alone	19	30.2
Grandparents	2	3.2
Guardian	4	6.3
Participant's Parents' Marital Status		
Married	41	65.1
Single	7	11.1
Separated	9	14.3
Divorced	3	4.8
I don't know	3	4.8
Participant's father's occupation status		
Not working	12	19.4
Employed	29	46.8
Business	21	33.9

Participant's mother's occupation status		
Not working	11	17.7
Employed	29	46.8
Business	22	35.5
Father's Level of education		
University	9	14.5
College	14	22.6
Secondary	7	11.3
Primary	2	3.2
Did not attend school	4	6.5
I don't know	26	41.9
Mother's Level of education		
University	11	17.7
College	10	15.9
Secondary	13	20.6
Primary	3	4.8
Did not attend school	5	7.9
I don't know	21	33.3

Table 1 presents the background distribution of socio-demographic characteristics of the study participants. The participants were grouped into two age categories; Participants aged 14-16 and 17-19, respectively. The frequency of participants aged 14-16 were higher (54, 84.4%) compared to participants aged 17-19 (10, 15.6%). The mean age at the background was 16 years. In terms of gender distribution, the frequency of female participants was higher at 61.3% compared to male participants at 38.7%. As regards participants class of study, the frequency of participants in class three was higher at 25.8% compared to class one at 3.2%, class two at 8.1%, class four at 21%, class five at 4.5%, class six at 1.6%, class seven at 19.4% and class eight at 16.1%. Distribution of other variables is shown on Table 2 below.

Table 2: Distribution of Severity of Depression and the Socio-Demographic Characteristics

Variables	Total %	Depression Scores			Chi-Square Test		
		Borderline	Moderate	Severe	X^2	df	Sig.
Participant's Age							
14-16	54 (84.4)	1 (1.6)	18 (28.1)	35 (54.7)	.325	1	.850
17-19	10 (15.6)	0 (0.0)	4 (6.3)	6 (9.4)			
Participant's Gender							
Male	24 (38.7)	0 (0.0)	7 (11.3)	17 (27.4)	1.130	1	.568
Female	38 (61.3)	1 (1.6)	14 (22.6)	23 (37.1)			
Participant's Class of Study							
Class One	2 (3.2)	0 (0.0)	2 (3.2)	0 (0.0)	19.804	7	.136
Class Two	5 (8.1)	1 (1.6)	2 (3.2)	2 (3.2)			
Class Three	16 (25.8)	0 (0.0)	4 (6.5)	12 (19.4)			
Class Four	13 (21.0)	0 (0.0)	4 (6.5)	9 (14.5)			
Class Five	3 (4.5)	0 (0.0)	1 (1.6)	2 (3.2)			
Class Six	1 (1.6)	0 (0.0)	0 (0.0)	1 (1.6)			
Class Seven	12 (19.4)	0 (0.0)	3 (4.8)	9 (14.5)			
Class Eight	10 (16.1)	0 (0.0)	5 (8.1)	5 (8.1)			
The caregiver the participant lives with							
Both Parents	35 (55.6)	1 (1.6)	13 (20.6)	21 (33.3)	3.919	4	.864
Father alone	3 (4.8)	0 (0.0)	0 (0.0)	3 (4.8)			
Mother alone	19 (30.2)	0 (0.0)	7 (11.1)	12 (19.0)			
Grandparents	2 (3.2)	0 (0.0)	0 (0.0)	2 (3.2)			
Guardian	4 (6.3)	0 (0.0)	1 (1.6)	3 (4.8)			
Participant's Parent's' Marital Status							
Married	41 (65.1)	1 (1.6)	13 (20.6)	27 (42.9)	2.133	4	.977
Single	7 (11.1)	0 (0.0)	2 (3.2)	5 (7.9)			
Separated	9 (14.3)	0 (0.0)	3 (4.8)	6 (9.5)			
Divorced	3 (4.8)	0 (0.0)	2 (3.2)	1 (1.6)			
I don't know	3 (4.8)	0 (0.0)	1 (1.6)	2 (3.2)			
Participant's Father's Occupational Status							
Not working	12 (19.4)	0 (0.0)	3 (4.8)	9 (14.5)	2.818	2	.589
Employed	29 (46.8)	0 (0.0)	9 (14.5)	20 (32.3)			
Business	21 (33.9)	1 (1.6)	8 (12.9)	12 (19.4)			
Participant's Mother's Occupational Status							
Not working	11 (17.7)	1 (1.6)	2 (3.2)	8 (12.9)	6.263	2	.180
Employed	29 (46.8)	0 (0.0)	12 (19.4)	17 (27.4)			
Business	22 (35.5)	0 (0.0)	7 (11.3)	15 (24.2)			
Father's Level of Education							
University	9 (14.5)	0 (0.0)	3 (4.8)	6 (9.7)	5.030	5	.889
College	14 (22.6)	1 (1.6)	5 (8.1)	8 (12.9)			
Secondary	7 (11.3)	0 (0.0)	3 (4.8)	4 (6.5)			

Primary	2 (3.2)	0 (0.0)	0 (0.0)	2 (3.2)			
Did not attend school	4 (6.5)	0 (0.0)	1 (1.6)	3 (4.8)			
I don't know	26 (41.9)	0 (0.0)	9 (14.5)	17 (27.4)			
Mother's Level of Education							
University	11 (17.7)	0 (0.0)	2 (3.2)	9 (14.3)	6.925	5	.733
College	10 (15.9)	0 (0.0)	5 (7.9)	5 (7.9)			
Secondary	13 (20.6)	1 (1.6)	4 (6.3)	8 (12.7)			
Primary	3 (4.8)	0 (0.0)	1 (1.6)	2 (3.2)			
Did not attend school	5 (7.9)	0 (0.0)	1 (1.6)	4 (6.3)			
I don't know	21 (33.3)	0 (0.0)	8 (12.7)	13 (20.6)			

Table 2 presents the distribution of severity of depression and socio-demographic characteristics. The participant's scores on depression were classified into borderline, moderate and severe depression using BDI-II. Chi-square test showed that there were no significant difference in the distributions of severity of depression across all socio-demographic characteristics as shown on the Table 2 (Ps >0.05). The distribution of participants scores on BDI-II showed that participants aged 14-16 scored higher on severe depression at 54.7% as opposed to participants aged 17-19 at 9.4%. Also, the distribution of moderate depression was higher among the participants aged 14-16 at 28.1% as opposed to participants aged 17-19 at 6.3%. Further, 1.6% of the participants aged 14-16 had borderline depression. This implies that all the specification of depression was more among participants aged 14-16. In regard to gender distribution, severe depression was higher for female participants at 37.1% compared to male participants at 27.4%. In addition, moderate depression was higher for female participants at 22.6% as opposed to male participants at 11.3%. In regard to borderline depression, female participants scored 1.2% whereas, no male participants presented with borderline depression. This indicates that depression and its specifications were found to be more among the female participants.

Regarding the participant's class of study, severe depression was found to be high in class three at 19.4% as opposed to class four at 14.5%, class seven at 14.5%, class eight at 8.1%, class five at 3.2%, class two at 3.2%, class six at 1.6% no participants identifying as severely depressed. Further, moderate distribution was high in class eight at 8.1% as compared to class three at 6.5%, class four at 6.5%, class seven at 4.8%, classes one and two at 3.2% each, class five at 1.6%. In regard to borderline depression, 1.6% of participants in class two only had borderline depression. The result of the test indicated that other participants did not exhibit the condition.

Based on who the participants lived with, distribution of severe depression was higher among participants who lived with both parents at 33.3% as opposed to those participants who lived with mothers alone at 19%, those who lived with fathers at 4.8%, those who lived with guardians at 4.8% and those who lived with grandparents at 3.2%. In addition, the distribution of moderate depression was higher among participants who lived with both parents at 20.6% as opposed to participants who lived with mothers alone at 11.1% and participants who lived with guardians at 1.6%.

In regard to marital status of participant's parents, the distribution of severe depression was higher among the participants whose parents were married at 42.9% compared to those who lived with separated parents at 9.5%, single parents at 7.9%, those who did not know the status of their parents at 3.2% and divorced at 1.6%. In regard to moderate depression, it was highly proportional among participants whose parents were married at 20.6% compared to participants whose parents were separated at 4.8%, divorced at 3.2%, single at 3.2% and those participants who did not know the status of their parents at 1.6%. Further, the distribution of borderline depression was higher among the participants whose parents were married. Results revealed that depression was more severe among participants whose parents were married.

Considering occupational status, frequency of severe depression was higher among the participants whose fathers were employed at 32.3% as opposed to those whose fathers were doing business at 19.4%, and those whose fathers were not working at 14.5%. Further, the frequency of moderate depression was higher among participants whose fathers were employed at 14.5%, those in business at 12.9% and those not working at 4.8%. In addition, severe depression was higher among participants whose mothers were employed at 27.4% as opposed to participants whose mothers were in business at 24.2%, and not working at 12.9%. Pertaining to frequency of moderate depression, it was higher among participants whose mothers were employed at 19.4% as opposed to participants whose mothers were in business at 11.3% and those not working at 3.2%.

The distribution of severe depression was higher for participants who did not know their fathers' level of education at 27.4% as opposed to participants whose fathers had college level education at 12.9%, participants whose father's level of education was university level were at 9.7%,

secondary level at 6.5%, those whose fathers did not attend school at 4.8% and primary level at 3.2%. Also, moderate depression was higher for participants who did not know their fathers' level of education at 14.5% as opposed to college level at 8.1%, university level at 4.8%, secondary level at 4.8% and 1.6% for those who did not attend school.

Further, severe depression was higher for participants who did not know their mothers' level of education at 20.6% as compared to those whose fathers' levels of education was university at 14.3%, secondary at 12.7%, college at 7.9%, those who did not attend school at 6.3% and primary level at 3.2%. In regard to moderate depression, the distribution was higher among participants who did not know their mothers' level of education at 12.7% as opposed to participants whose mother's level of education was college at 7.9%, secondary level at 6.3%, university level at 3.2%, primary level at 1.6% and those who did not attend school at 1.6%.

Discussion

The findings of this study showed that the proportion of severe depression was higher among DHH adolescents aged 14-16 at 57.9%. The reasons for experiencing depression at this onset of adolesence stage could be a desire for greater autonomy, pressure to conform with peers, exploration of sexual identity and increased access to and use of technology. Further, depressive symptoms in DHH adolescents may stem from situations that involve social interactions such as loss of ability to interct, rejection and isolation. These findings corroborate with the findings of another study (Landsberger, Diaz, Spring, Sheward, & Sculley, 2014) where severe depression was found among adolescents at 33.3% and suicidal behavior at 14%. Further, DHH had moderate to severe depression caused by severe impairment in social relationships at 54.8%, and school functioning at 42.9%. This was supported by a report (Center for Behavioral Health Statistics and Quality, 2016) that 12.5% of DHH adolescents in United States were affected by severe depression. Similarly, the results of a study done by Hapunda-Chibanga (2016) revealed that the prevalence of moderate to severe depression was 4.9% among DHH adolescents.

To reinforce these findings, a study conducted by Rostami, Bahamani, Movallali and Vahid (2014), reported that adolescence was a very difficult transitional period of life when adolescents are highly stressed, moody, struggle with identity and self-image due to developmental changes that occur at this phase of life. This developmental phase in an adolescents' lives is likely to

accelerate depressive symptoms. Likewise, Adigun (2017) concurs with these findings by observing that 25% of adolescents investigated experienced major depression. Similarly, these findings were reinforced by a study done by Hapunda-Chibanga (2016) whose results revealed that the prevalence of moderate to severe depression among DHH adolescents was 4.9% in a school-based cross sectional survey in which 1277 DHH adolescents aged between 6 to 13 years participated. The study also revealed that the prevalence of depression among DHH adolescents was high and triggered by major problems in communication that lead to social and psychological alienation in the family and at school. This ultimately leads to stress, which triggers depression and resultantly affects academic performance due to depressed mood episodes experienced by adolescents.

The study findings showed that severe depression was high among participants whose fathers were employed at 32.3%. This could be associated with the continuous absence of fathers from home that be attributed to lack of security in the family. Further, their absence leads to minimal interaction and lack of parental guidance making the father to be a stranger to his children which can trigger depression. These findings differ with a study conducted by Kushalnagar, Bruce, Sutton & Leigh (2017) which revealed that severe depression was high among DHH male who communicated with their mothers. This implies that greater attention needs to be given to promoting healthy communication between DHH adolescents with their fathers or paternal figures. This was contrary to observations made by Rostami, Bahamani, Movallali & Vahid (2014) which revealed that the child's father's profession did not seem to have any effect on the child's level of depression.

In regard to gender, severe depression was highly distributed among females at 37.1% as compared to males at 27.4%. In addition, moderate depression distribution was higher for female participants at 22.6% as opposed to male participants at 11.3%. This finding is supported by a study conducted by Tambs, Kvam & Loeb (2007) where females had severe depression than males. The findings seem to agree with a study that found out that females had severe depression compared to males at 16.9% and 14.7% respectively (Ming Li, et al., 2014). Likewise, these findings concur with a study conducted by Emond, Ridd, Sutherland, Allsop, Alexander and Kyle, (2015) that found out that 31% females reported severe depression when compared to their male counterpants who were at 14%. Several reasons could be inferred on why females tend to

exhibit depression more than their male counterparts. Such reasons include hormone changes during puberty or pregnancy, temporary mood swings related to fluctuating hormones, prementrual syndrome symptoms such as abdominal bloating, breast tenderness, headache, and irritability. In addition to these reasons, depression may increase during the early or after transition to menstrual periods. However, this finding was contrary to a study conducted by Gomaa, Elmagd, Elbadry & Kader (2014) where males had severe to extreme depression (52.5%) more than females (46.7%). This notwithstanding, the finding is not consistent with the finding of a study by Hsu, Hsu, Wen, Lin & Tsai (2016) which found out that relative risk of depression was equally distributed on both genders. Additionally, conflicted results on a national cohort study by Kim et al., (2017) indicated that severe depression was consistent in all ages and sex groups. The noticeable inconsistency could be as a result of uncontrollable variables or random experimental error in research. Another reason for the inconsistency could the environment where the research was conducted.

Based on who the participants lived with, severe depression was highly distributed on participants who lived with both parents at 33.3% as opposed to those participants who lived with mothers only at 19%, those who lived with fathers only at 4.8%, those who lived with guardians were at 4.8% and those who lived with grandparents stood at 3.2%. This finding can be explained that approximately 90% of DHH adolescents are born to parents who are not DHH, thus, reduced attachment and decreased attuned communication due to communication breakdown could lead to depression (Szarkowski & Brice, 2016). Additionally, inadequate expression of what the DHH go through affect how they feel. Their feelings expose them to stressful situations which eventually make them vulnerable to depression (Bozzay, et al., 2017). On the other hand, this finding could represent modest cultural differences in the experiences of depressed adolescents.

It is known that DHH adolescents have a cultural-identity distinct from that of more dominant cultural groups (Rogers, Evans, Campbell, Young, & Lovell, 2014). This leads to child-parent conflicts that cause depression to DHH adolescents as they desire to express themselves and find freedom to be who they want to be but are not able. Similarly, absent parents who spend more time at work do not have sufficient time to be with their adolescents. This affects the relationship with their DHH adolescents leading to feelings of rejection, isolation and confusion

(Landsberger, Diaz, Spring, Sheward, & Sculley, 2014). Furthermore, this finding indicates that distribution of severe depression was higher among the participants whose parents were employed (32.3% and 27.4%) which confirm why DHH adolescents who lived with both parents had high distribution of severe depression. Therefore, parents need to create quality time for their DHH adolescents to guide and teach them on how to cope with life challenges. In addition, parents need to take a bold step to learn sign language to make communication with their children easy and more effective.

Conclusion

This study showed that the severity of depression among the participants was higher among participant aged 14-16, female participants and class three participants. Chi-square test showed that there was no significant difference in the distributions of severity of depression across all socio-demographic characteristics. In addition, this study found out that severe depression was more among participants who lived with both parents. In regard to the participants' fathers' occupational status, severe depression was more among participants whose fathers were employed. This study further revealed that severe depression was high on participants whose mothers were employed. On the other hand, this study revealed that severe depression was higher among participants who did not know their parents' level of education than those who knew.

These results suggest strong links between social, DHH adolescent's behavior, effective communication, and severe depression. Restricted communication that occurs between DHH adolescents and their caregivers could lead to depression symptoms and consequently poor academic performance. As DHH adolescents develop, it is important that their mode of communication, does not only reflects their current level of development but also promotes it. This has implications for parents, teachers and others who work with these learners particularly in promoting effective communication that can address the concerns of DHH with regard to depression.

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