Social-Emotional Perceptions of Deaf Students in Hail, Saudi Arabia

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Abstract **Background:** To date, studies of deaf student's perceptions using a multidimensional self-report instrument to measure their overall social-emotional adjustment in private educational establishments in the western world are few, especially between the ages of 15-21. In terms of Saudi Arabia studies both cross-sectional and longitudinal are few on the social-emotional function of deaf students. We chose to look at standardized surveys of students' perceptions to provide a multidimensional picture of the social- emotive function of the students who are deaf or hard of hearing (SDHH) in a university and high school in Saudi Arabia. In the following sections we (a) Describe a framework for measuring social emotive perceptions for students in Saudi Arabia. (b) Review the social emotive status of students that are deaf or hard of hearing (SDHH) by their perceptions. (c) Review the factors contributing to SDHH social-emotive status. **Methods:** A cross sectional study was carried out on seventy female students of ages 15-18 and 18-21 with varying degrees of sensor neural deafness. This was carried out by interviews of the students to answer our objectives. **Results and Discussion:** A high significant number of students surveyed in our study were happy with themselves and satisfied with their situation in the private setting both in the university and the high school. The majority of female SDHH in this study, however, perceived barriers when communicating and got embarrassed when speaking with people that did not understand them. **Conclusion:** *This study has aided our understanding of the social-emotive factors perceived by SDHH in the private setting.* The SDHH in this study had positive attitudes towards achieving their goals, making friends and their well being and this could be encouraged in the future by teachers and parents. A number of SDHH in this study did not know of the government support available to them. More workshops to educate the students on the government services available and how to receive them would aid in this.

Keywords: deafness, hearing loss, social performance, integration

Cite This Article: Maha Al-shammari, Asma Ashankyty, Najmah Al-Mowina, Nadia Al-Mutairy, Lulwah Al-shammari, Anfal al-qrnas, and Susan Amin, "Social-Emotional Perceptions of Deaf Students in Hail, Saudi Arabia." *American Journal of Educational Research*, vol. 2, no. 5 (2014): 304-315. doi: 10.12691/education-2-5-11.

1. Introduction

This paper explores the perspectives of students with varying degrees of deafness on issues relating to social-emotive performance in Hail, Saudi Arabia.

There is a vast amount of interest in the self-concept issue of deaf children and adolescents especially between the ages of 15 to 21 [1,2,3,4].

Self-concept and ego development reflect the two intertwined aspects of self that were distinguished by William James in 1890: self as object of one's knowledge and evaluation (Me-self) and self as actor or knower (I-self). Traditionally, the Me-self emphasizes self-esteem or global self-worth (these labels are interchangeably used throughout the text). [5,6] Evidence suggests that support especially from peers such as class mates in the public domain, is more predictive of global self-worth, than support from close friends. The other comprises scholastic competence and behavioral conduct and is more strongly related to parental approval. [7] The I self or ego development Ego development may be portrayed as a series of changes in social-cognitive maturation along lines of impulse control, complexity of self-reflection, interpersonal relations, and conscious preoccupations [8].

A positive self-concept is associated with higher levels of positive adjustment to many situations and lower levels of psychosocial problems [9,10,11].

About 90–95% of students that are deaf or heard or hearing (SDHH) are born into hearing families, and most SDHH are educated by hearing teachers. [12] Communication problems may arise as SDHH are more dependent on vision and visual orientation than hearing peers, and they are more likely to miss or to misinterpret parts of information [13].

The age at which an individual experiences a hearing loss has a great impact on language acquisition. Language is ordinarily acquired through the frequent and repeated exposure to speech which begins in infancy. An individual who learns speech and language patterns through such early exposure will normally retain and continue to use

them even if his or her hearing deteriorates later in life. On the other hand, developing speaking skills is infinitely harder for someone born deaf. It is very difficult to learn to produce sounds that cannot be heard and also be difficult to read from a speaker's lips.

Minority ethnic status, usually associated with a home language different from the majority language, consistently depresses social attainment. [14,15] This is of importance when assessing the social achievement perceptions of SDHH in Saudi Arabia where the main language used in schools and homes is Arabic. For these students, English is not their primary language of academic discourse. Many of these students who sign have limited English proficiency as well. [16-23] Therefore examination and sign in the English language may inhibit the ability of deaf and hard-of-hearing students to fully express what they know. In general, the ability of SDHH to learn spoken language remains limited despite the development of amplification devices [24].

Moreover, most hearing students use more restricted communication discourse patterns with SDHH than deaf-to-deaf individuals do. [25] As a result of such circumstances, deaf children are at risk of suffering from less diversity in words in early experience, [24] less learning by incident, [26] and less exposure to a variety relationships that are of cause-effect than their hearing peers [27].

Another study suggests that SDHH (Years 3-6 of study; aged 8-12 years) have a wide range of pragmatic skills that they use effectively when conversing with their hearing peers. Specifically, these children asked more questions, made more personal comments, started more topics, and took longer turns in their conversations with a hearing friend. In contrast, the conversations between hearing peers were very balanced with similar topic initiation, length of turn, numbers of questions, personal comments, and short answers [28].

Social integration can be defined as the ability to interact with, make friends with, and be accepted by peers. In other words students need to be engaged in social activates to develop secure relationships with peers. Students who are not integrated may have feelings of loneliness, because they feel they cannot participate in activities because of their communication difficulties. [29] They tend to be quiet as a result both inside and outside the classroom, this in turn will affect their academic performance [30].

Research on the academic achievement of SDHH indicates that they lag far behind what is expected of their hearing peers at similar ages or grade levels in the western world. [14,31] SDHH who receive their instruction in general education classrooms are reported to have higher academic achievement than those who receive instruction in self-contained classrooms [32,33].

Further, the type of school placement (mainstreaming vs. special programs) affects the SDHH social interactions, which in turn influences his or her social-emotional functioning. One study found that deaf students from mainstreaming programs and special programs for the deaf and hard-of-hearing reported feeling most emotionally secure with other students who had a hearing loss. [34] In contrast, another study found that deaf adolescents in special programs rated themselves as having more numerous and more frequent withdrawn behavior and anxious or depressed feelings than their deaf mainstreamed peers and hearing peers [35]. A further study concludes that there are simply not enough findings to make definitive claims regarding social-emotional outcomes based on school placement [3].

The lasting communicative deprivation, misunderstandings and sometimes even isolation, may be particularly troublesome during adolescence when belonging to a social network, and intimate attachments with parents and peers are especially important for the development of a sense of competence and for identity or ego development [18,36,37].

These characteristics along with cultural experience will determine the extent to which a deaf student will integrate into new communities at the college. One study showed the importance of social integration ("social satisfaction") is persistence at the college level. Their investigation indicated that first-year students who expressed greater "social satisfaction" were more likely to persist. Interestingly, this did not mean joining in many social activities. Students who engaged in more sponsored college activities were less likely to remain. Rather, it seemed that students who established relationships with roommates and those who developed independent living skills and time management skills felt more truly integrated into the college community [38].

Two studies indicate that deaf students drop out of college because of limited personal resources and lack of socialization. [39,40] In this study, we decided to focus on personal factors such as motivation and attitude because the literature indicates that many hearing students enter college unprepared personally, emotionally, or socially for postsecondary education. [40,41,42] A number of studies looked at the roles played by communication and informal social interaction in achieving a measure of social integration. Their research showed that the difficulty of overcoming feelings of separateness and isolation in a mainstream setting was overcome with adequate support services. Also having goals and commitments are highly relevant to deaf students. If one has no clear career goal upon entry, persistence is enhanced if one does by the end of the first year [43,44].

College is a safe place to explore ideas, opportunities, and lifestyles, and offers increased opportunities for self-governance and individuation from parents. [45] One study showed that the significantly higher loneliness scores by SDHH in college are a reflection of their different lifestyle experience rather than a reflection of higher loneliness. [46] this means that deaf individuals have an experience of this world that is neither better nor worse than that of a hearing person, just different from them.

Variables that have been identified by researchers as contributing to the success of these students were good family support, student determination to succeed, and an outgoing personality [47].

Disassociating the influence of these variables is difficult because they are often connected in complex ways. Also, the variables are likely to be correlated to each other. For example, degree of hearing loss is likely to be related to receptive and expressive oral communication skills, which in turn may be related to communication and participation in the classroom.

Classroom participation for SDHH requires the ability of them to communicate with their teachers and other students. This is major requisite to academic success.

One of the first co enrollment studies between SDHH and their hearing peers showed that socially, SDHH and hearing students developed friendships that were maintained outside of the classroom setting and had learned to communicate with one another in a comfortable way. [48,49] Another study that coincides with this study reported also "astonishing" sign skill development among hearing students (p. 14) [50].

A more recent study on integration found that the social interaction between SDHH and hearing classmates suggest specific instructional strategies that promoted students' sign language development, identified SDHH as "sign language specialists" and the grouping of SDHH and hearing students during academic activities resulted in increased interaction between these two groups [51].

In contrast studies conducted since the mainstreaming era have revealed that deaf children in regular school classrooms often feel lonely and left out of interactions involving their hearing classmates. [52,53,54] To some extent, such feelings of isolation are justified, as studies have indicated that hearing children tend to have negative views of deaf peers and frequently resist their inclusion in group activities [55,56,57].

Compared to their hearing peers SDHH generally have fewer friends and those friendships are of a lower quality. [58] Essential for student's development, friendships are seen as voluntarily starting, maintaining and ending reciprocal relationships. High-quality friendships are related to higher levels of socio-emotional self, [59] positive social development [60] and better adjustment in the school system. [61] Additionally students with fewer friends are more likely to drop out of school early, develop a psychopathology or become involved in criminal activities [62].

One study suggests that the difficulties that SDHH experience in establishing friendships might be due to their geographical distance from other peers, which hinders them from "hanging out" with peers. With regard to establishing friendships with hearing peers, communication problems are one of the barriers that deaf adolescents face. [63] Those difficulties are shown to be related to fewer socialization skills in deaf persons. [64] Mainstreamed deaf students specifically have been reported to prefer to socialize with other SDHH and to lack close friendships within their schools. [65] Furthermore, compared to their hearing peers, deaf persons tend to show poorer mental health: They report more loneliness, a higher risk of psychosocial problems, and a lower general well-being than their hearing peers. [66,67] With regard to the influence of friendships in SDHH, one study showed that positive relationships of deaf adolescents with their hearing classmates in grades 6 and 7 were related to higher levels of well-being [68].

One social-emotional area that has been examined in SDHH and emerging adults is the presence of depression. In one study using the revised Beck Depression Inventory, in a group of 50 residential deaf school adolescents (mean age 14) a high frequency of depressive symptoms was reported and a greater tendency toward experiencing boredom than the hearing students. [69] Another study found that 50% of their sample of deaf college undergraduate's self-ratings fell in at least the mildly depressed range [70].

Another study found that parents of deaf children aged 4–18 rated them significantly higher (41%) for social-emotional behavior problems than did a sample of parents with hearing children (16%). [71] Additional findings from this study showed that the deaf adolescents aged 12–18 showed more anxiety, depression, and social problems than the younger deaf children. Further the deaf youth (12–18 years) self-reported higher internalizing and externalizing behaviors than did the hearing participants. [72] Intelligence level, moreover, was negatively correlated with social emotional problems—students who had lower intelligence scores had more social emotional problems [73,74].

In comparison to studies involving hearing children, there is limited research examining the perceptions of parents and deaf children with regard to social-emotional functioning. One study of 111 Swedish deaf and hard-of-hearing children, found that teachers' ratings of students' social competence were significantly lower than those scored by the students and their parents, the parents and students scores did not differ from each other [75].

A more recent study conducted a profile analysis of teachers' ratings, parents' ratings, children's self-reports, children interviews, and researcher observations. Responses from 20 deaf and 20 hearing children aged 8–11 years were organized into six different constructs: externalizing behaviors, internalizing behaviors, social skills, loneliness, school interest/ assertiveness, and task orientation. Deaf children and hearing children did not differ significantly on the first four constructs but did on the school interest/assertiveness and task orientation constructs. Deaf children also reported more difficulty in making friends [76].

In terms of Saudi Arabia studies on social emotive function, both cross sectional and longitudinal in the private education setting are few. To date, no published study has used a multidimensional self-report instrument with ''emerging adults'' (15-21) to measure their overall social-emotional adjustment. The studies that have been completed have either used self-reports limited to a single construct, such as loneliness or depression.

One Arab study in Israel compared teachers' perceptions of 33 SDHH and 66 hearing students in the same general education classrooms. A questionnaire that tapped the general education teachers' perception of student performance in five domains: academics, attention, communication, class participation, and school behavior was used. The teachers gave the SDHH significantly lower scores in all domains compared to their hearing peers [77].

A more recent KSA study on the perceptions of academic and social progress of SDHH in a private education classroom, showed that the students performance in the class room was effected by communication difficulties associated with their hearing and this in turn affected their academic performance. However this study was only for high school students [78].

We chose to look at standardized surveys of students' perceptions of their social emotive functioning to provide a multidimensional picture of the social status of the SDHH in this study. We surveyed SDHH between the

ages 15-21 to be able to get an idea of status of "emerging adults" in the high school and university in KSA.

In the following sections, we

(a) Describe a framework for measuring social emotive perceptions for students in Saudi Arabia.

(b) Review the social emotive status of SDHH students by their perceptions.

(c) Review the factors contributing to SDHH social status.

2. Methodology

2.1. Subjects

A cross sectional study of 40 university SDHH females (n =40) and 30 high school SDHH females (n=30) (total n=70) with impaired hearing levels from a university and high school in Hail, Saudi Arabia were interviewed and surveyed by the participating student researchers. These students were randomly selected.

SDHH were eligible to participate if they met the following requirements at the time of enrollment in the study: (a) had an identified bilateral or unilateral hearing loss, (b) did not have additional severe cognitive disabilities, (c) received direct or consultative services from teachers of SDHH, (d) attended general or private education classrooms in public schools or university for two or more hours each day, and (e) were aged between 15-21 at the beginning of the study.

Due to the potentially sensitive nature of the views shared in the study, participants were not required to provide identifying information to participate in the survey. Responses were therefore anonymous unless individuals chose to provide their contact information.

The type of hearing loss of the students was sensorineural. Sensorineural deafness is more common in Saudi Arabia than in any other developing or developed region [79].

The questions in the survey were designed to collect information on the aims for the project and to give us some information on deafness in Saudi Arabia. This age range was selected as a result of being under represented in other studies.

An aged match sample of normal hearing students from the same education establishment were also surveyed with questions from our surveys at a similar time.

2.2. Interviews

After a brief introduction to the study, students were given the option to participate or not. Students signed an informed consent form and then filled out the questionnaire. The directions were signed/voiced and also provided on the survey. The survey required approximately 10–30 min for completion. When students had any questions about items in the questionnaire, these questions were answered.

The questionnaires used were in Arabic. The data collected from the questionnaires were translated into English. All interviews were conducted by the research students in the project. Most interviews were conducted in person to try and build a rapport with the student; the interviewer traveled to each school to meet with each interviewee. Typically, all interviews for a particular

student were conducted in 2 days. Each interviewee was free to refuse to answer questions at their discretion.

2.3. Ethical Approval

The study protocol was approved by the research committee at the University of Hail and from the respective high schools and university. In addition, all the schools and students consented to involvement in the study.

2.4. Methods and Survey Design

A selected number of items from the Life Difficulties section of the 16PF-Adolescent Personality Questionnaire (APQ) were selected and used for this study. The questionnaire, which covers many areas known to be problematic to adolescents, was developed for hearing and non hearing students who range from ages 15 to 21 years. [80] One of the reasons this instrument was chosen is that the language level of the Life Difficulties section is free of compound sentences and uses few idioms. The Life Difficulties section of the 16PF-APQ consisted of the following 11 scales: discouragement, worry, poor body image, overall discomfort, problems with authority, anger or aggression, overall trouble, home, school, Social acceptance and coping. Please see Appendix for examples of items for each scale.

The original forms of these instruments were not used because they included too many items given the time demands of the primary study, lacked items tapping some of the issues we wished to investigate, and had others superfluous to our needs. In addition, although the questions could be read verbatim to the students in the high schools by their teacher sign language versions in Arabic sign were needed by a majority of students.

All questions required responses on a 5-point scale representing true, mostly true, sometimes true/sometimes false, mostly false, and false.

We developed follow-up questions for each major question to obtain further information when necessary. Impaired hearing sections from the high schools and universities were selected and a teacher from the school was used to help us in the translation of Arabic to sign language for the students.

The level of ego development was assessed using the Washington University Sentence Completion Test, specifically constructed for use with children over 8 years of age and adolescents. [81,82] Please see appendix for items used form this test.

2.5. Demographic status

Demographic information on the students was collected through a form emailed to each student's teacher of SDHH who collected the data from the student's files, completed the form, and returned it to the researchers. The demographic data were used only to provide information on student characteristics.

2.6. Statistical analysis

We used a Chi Squared test for the two groups of yes and no responses to test for differences in the two groups of female students to the questions in the survey. The level of significance in a chi-square for a two-tailed 1-df test

was a value of 3.84 or greater. We used 2 way ANOVA to test for interactions among gender, hearing status and social performance of the students in this study. A p value of 0.05 or more was considered significant.

3. Results

Two groups of female SDHH from a high school, age range (15-18) and university, age range (18-21) were analyzed with questions in the survey to understand about social-emotive perceptions in Hail, KSA. Comparisons were also made with age matched group of hearing female students from the same university.

3.1. Demographics of the Students

Most of the female SDHH were educated in a private setting of the mainstream institution (Table 1).

In comparison with the female SDHH from the university more high school female SDHH were born deaf in this study (93% versus 90%) (Table 1). In comparison with the female SDHH from the high school more university female SDHH had a family history of deafness (75% versus 33%).

All the students could understand Arabic both in the home and in the school and we were told by their teachers they could read lips and answer in some Arabic; however, their English ability was minimal.

The most prevalent form of communication is some type of sign and speech together by a single individual (57%) followed by hearing aid (43%). None of the students just used sign (Table 1).

The students in this study did not answer questions relating to the socio-economic impact. This section was therefore excluded from our study.

Table 1. Student demographic information for female university and high school SDHH collected in Hail. Percentage change is given in parentheses as well as the numbers of actual students. * indicates significance (χ 2 > 3.84)

Characteristic	Total	Females from university	Females from High school
Total number of students	70	40 (57)	30 (43)
Language at home: Arabic	70	40 (57)	30 (43)
English	0	0	0
Age	70	18-21 (57)	15-18 (43)
Mode of communication in school: Spoken with hearing aid	70	0	30 (43)
Spoken and signed	70	40 (57)	0
Signed	0	0	0
Type of school: Private	70	40 (57)	30 (43)
Mainstream	0	0	0
Deaf since birth yes	70	36 (90)*	28* (93)*
No	70	4 (10) *	2 (7)*
Family history of deafness yes	70	30 (75)*	10 (33)*
No	70	10 (25)*	20 (67)*
Do your parents work?	70	Missing data	Missing data

3.2. Responses from the Students on Communication Problems Perceived

Table 2.1 and Table 2.2 were designed to answer our aims of communication difficulties preceived by the students. Table 2.1 compares the different ages of the students, wheras Table 2.2 compares the responses of the deaf students with hearing students. Statistical significant more female SDHH from the university felt they had

problems with communicating compared to the the female SDHH from the high school (90% versus 66%) (Table 2.1).

Statistical significant more female SDHH from the university wanted to communicate with normal hearing people compared to the the female SDHH from the high school (80% versus 60%) (Table 2.1).

All of the female SDHH from the university and high school felt embarrassed when communicating with someone that did not understand them (Table 2.1).

A significant high perecntage of female SDHH from the university and the high school felt they had barriers with communicating (90% and 93% respectively) (Table 2.1)

Statistical significant more female SDHH from the high school liked dealing with strangers compared to the the female SDHH from the university (93% versus 66%) (Table 2.1).

Table 2.1. A comparison between female SDHH in the high school and the university on their self perceptions of communication. Percentage change is given in parentheses as well as the numbers of actual students. * indicates significance (χ 2 > 3.84)

Characteristic	Total	Females from university	Females from High school
Total number of students	70	40 (57)	30 (43)
Do you have Problems with communicating? Yes	70	36 (90)*	20 (66)*
No	70	4 (10)*	10 (34)*
Would you like to communicate with normal hearing people? Yes	70	32 (80)*	18 (60)*
No	70	8 (20)*	12 (40)*
Do you feel embarrassed when communicating with students that do not understand you? Yes	70	40 (57)	30 (43)
No	70	0	0
Do you feel you have barriers that prevent you from communicating with others? Yes	70	36 (90)*	28 (93)*
No	70	4 (10)*	2 (7)*
Do you like dealing with strangers? Yes	70	26 (65)*	28 (93)*
No	70	14 (35) *	2 (7)*

Table 2.2. A comparison between female SDHH in the university and a normal hearing group of females from the same university on their self perceptions of communication. Percentage change is given in parentheses as well as the numbers of actual students. * indicates significance (χ 2 > 3.84)

Characteristic	Total	Females SDHH from university	Females normal hearing from university
Total number of students	88	40 (45)	48 (55)
Do you feel embarrassed when communicating with students that do not understand you? Yes	88	40 (100)	17 (35)*
No	88	0	31 (65)*
Do you feel you have barriers that prevent you from communicating with others? Yes	88	36 (90)*	13 (27)*
No	88	4 (10)*	35 (73)*
Do you like dealing with strangers? Yes	88	26 (65)*	23 (47)*
No	88	14 (35) *	25 (53)*

In comparison to the normal hearing group, All of the female SDHH from the university felt embarrassed when

communicating with students that did not understand them (100 % versus 35%) (Table 2.2).

In comparison to the normal hearing group,Most of the female SDHH from the university felt they had barriers when communicating with students that did not understand them. (90 % versus 27%) (Table 2.2).

In comparison to the normal hearing group,Most of the female SDHH from the university did not like dealing with strangers (65 % versus 47%) (Table 2.2).

3.3. Responses from the Students on their Perceived Emotional State and Well Being

Table 3 was designed to answer our aims of emotional well being preceived by the students.Statistical significant more female SDHH from the university were happy with themselves compared to the the female SDHH from the high school (100% versus 86%) (Table 3).

A majority of the female SDHH from the university and the high school were satisfied with their situation (95% versus 93%) (Table 3).

A majority of the female SDHH from the university and the high school felt it was possible to achieve their goals and do the impossible (85% versus 80%) (Table 3).

Table 3. A comparison between female SDHH in the university and female SDHH from a high school on their self perceptions of emotional well being. Percentage change is given in parentheses as well as the numbers of actual students. * indicates significance ($\chi 2 > 3.84$)

Characteristic	Total	Females SDHH from university	Females SDHH from high school
Total number of students	70	40 (57)	30 (43)
Are you happy with yourself? Yes	70	40 (100)	26 (86)*
No	70	0	4 (14)*
Are you satisfied with your situation? Yes	70	38 (95)*	28 (93)*
No	70	2 (5)*	2 (7)*
Do you think you are able to achieve your goals (the impossible)? Yes	70	34 (85)*	24 (80)*
No	70	6 (15)*	6 (20)*

3.4. Responses from the Students on their Parental Support and how Society Accepts them

Table 4. A comparison between female SDHH in the university and female SDHH from a high school on their self perceptions of parental support and society. Percentage change is given in parentheses as well as the numbers of actual students. * indicates significance ($\chi 2 > 3.84$)

Characteristic	Total	Females SDHH from university	Females SDHH from high school
Total number of students	70	40 (57)	30 (43)
Does your family understand you when you get upset about something? Yes	70	36 (90)*	20 (66)*
No	70	4 (10) *	10 (34)*
Are you parents happy that you are studying at school/university? Yes	70	28 (70)*	26 (86)*
No	70	12 (30)*	4 (14)*
Do you think you are accepted into your society? Yes	70	26 (65)*	28 (93)*
No	70	14 (35) *	2 (7)*

Table 4 was designed to answer our aims on the parental support preceived by the students.Statistical significant more female SDHH from the university felt that their parents understood them when they got upset about something compared to the female SDHH from the high school (90% versus 66%) (Table 4).

In comparison to the university, more female SDHH from the high school felt that that their parents were happy with them studying at high school (86% versus 70%) (Table 4).

In comparison to the university, more female SDHH from the high school felt that that their society accpets them (93%versus 65%) (Table 4).

3.5. Responses from the Students on Services available to them both Inside and Outside School

Table 5 was designed to answer our aims on any governmental support if any received by the students.Statistical significant more female SDHH from the high school were receiving state services as compared to those from the university (53% versus 10%) (Table 5).

In comparison to the university more female SDHH from the high school had a department that was helping them with their special needs (93% versus 30%) (Table 5). Forty five per cent of the students from the university did not know that there was a department in the university to help them.

Table 5. A comparison between female SDHH in the university and female SDHH from a high school on their self perceptions of services available to them. Percentage change is given in parentheses as well as the numbers of actual students. * indicates significance ($\chi 2 > 3.84$)

Characteristic	Total	Females SDHH from university	Females SDHH from high school
Total number of students	70	40 (57)	30 (43)
Do you receive state services? Yes	70	4 (10)*	16 (53)*
No	70	36 (90) *	14 (47)*
Is there a department helping you with your special needs at school/university? Yes	70	12 (30)*	28 (93)*
No	70	10 (25)*	2 (7)*
Don't Know	70	18 (45)*	

3.6. Recess Observations of the Hearing and Non Hearing Students.

Hearing students tended to mix with peers from other disciplines. These students were science students and would go the Arts and Humanities sections to meet with friends. A lot of the students had known each other since high school or middle school.

The discussions between the hearing students were very loud and there was a lot of laughing.

The non hearing students on the other hand tended to mix with their peers from the class. On one occasion some hearing students came to meet them and when questioned, they were the siblings of one of the deaf students.

The discussions between the SDHH tended to be quieter with some speech and a lot of sign.

3.7. Interactions among Hearing Status and Social-emotive Performance

Preliminary analyses for group comparisons on the three scales examined possible differences between an interaction between hearing, gender and social skills using 2 (gender: female and age 15-18 and 18-21) by 2 (hearing status: hearing aid versus sign and speech) by 2 (communication with parents and social communication) analyses of variance (ANOVAs) in which the last factor was within-subjects. None of those analyses revealed any main effects or interactions both among and within for gender, hearing and social aspects ($p < 0.05$).

4. Discussion

We chose to look at standardized surveys of students' perceptions of their social emotive functioning to provide a multidimensional picture of the social status of the SDHH in this study. We surveyed SDHH between the ages 15-21 to be able to get an idea of status of "emerging adults" in a high school and university in Hail, Saudi Arabia.

In the following sections we

(a) Describe a framework for measuring social emotive perceptions for students in Saudi Arabia.

(b) Review the social emotive status of SDHH students by their perceptions.

(c) Review the factors contributing to SDHH social status.

All the students in this study were educated in private sections; this may be as a result of the communication difficulties they may encounter and the fear of being stigmatized. However, in many parts of the world there has been a shift towards integration of SDHH and normal hearing students. [83] In this study all of the female SDHH surveyed felt they had problems with communicating. Most of the university and high school SDHH in this study wanted to communicate with normal hearing students.

Numerous studies have found higher levels of academic achievement among SDHH in mainstream classrooms than in schools for the deaf. [9,84] Kluwin described what he referred to as a "cumulative effect" of mainstream placement, insofar as achievement was positively related to the number of classes taken in regular classrooms as well as their academic intensity [85].

Most of the female SDHH in this study were actually deaf since birth (90 versus 93%) There was also a higher family history of deafness among the university students compared to the high school students. Most of the university students also communicated by sign language and speech together compared to the high school students. The high school students on the other hand tended to communicate with the aid of a hearing aid. This difference may be attributed to the age of the students. Those in the high school may feel less confident to deal with expression in sign language compared to the university students as they may not have had much exposure in this type of communication. None of the students in this study used just sign it was mixed with speech. This coincides with another study that also found the most prevalent form of communication among SDHH students is some type of

sign and speech together by a single individual (56%) followed by sign language (45%) and oral only (44%) [86].

This coincides with another study in the US where teachers noted that more female students showed a stronger interest in sign language and developed sign skills more rapidly than male students. Friendships between SDHH and hearing students therefore first developed between female students [87].

All of the SDHH in this study did not use any English in the home or their institution. They mainly used Arabic, words and sign on a daily basis. This is in line with other studies who also found the English levels of SDHH to be behind that of their peers [88].

The majority of female SDHH in this study got embarrassed when speaking with people that did not understand them. They also felt they had barriers with communicating. This is in contrast to the normal hearing group surveyed who had less barriers with communicating and did not get embarrassed as much when speaking to people that did not understand them. This coincides with one study that also found a similar weakness among SDHH using these parameters. In this study the students reported higher levels of stress compared to the national norms related to a lack of confidence and the persistent perception of barriers (despite the availability of support services) [88].

In terms of dealing with strangers, more high school female SDHH felt more comfortable than those from the university. The high school students may have perceived this as a result of changes in society that is allowing them access to meeting people which may not have been around when the university females were their age. The university female SDHH however felt more comfortable dealing with strangers than the normal hearing girls from the same university. This may be due to Saudi women being protected in a society where they are not able to deal with strangers especially men, as much as in the Western world. The students who are deaf may get opportunities for exposure in places such as clinical settings and this may give them confidence. These findings coincide with another study that found this is related to the apparent challenges of the individuation process for deaf adolescents [89].

The communication difficulties perceived among SDHH may be related to their isolation from the rest of their peers at home. In one study SDHH more than hearing students tended to play computer games and do homework assignments with an offline or online friend on the computer. Although it hasn't been studied why students choose to do certain activities with each other, the study cited communication difficulties for the differences in activities with friends. It is possible that hearing students tend to hang out with their offline friends and do activities outdoors, activities that require dialogues more than computer games do. SDHH may choose this option for their friends as it provides them with a quiet and comfortable environment in which communication costs less effort. In this study we did not look at the internet use of the SDHH, but this will be of interest in future research. [90] Saudi Arabia provides an ideal environment for this in line with the restrictions in social interactions among males and females.

In our study we did find differences in friends ships between hearing and non hearing students, the hearing

students tended to mix with students from other disciplines, whereas the SDHH in the university tended to mix with students from their class only. This coincides with another study that found hearing students tended to have a greater mixed friendship quality and this is associated with less loneliness and more life satisfaction. These findings are also in agreement with previous studies on the relationship of general mixed friendship quality with wellbeing. [91] Positive friendship qualities work as a buffer to drown out negative life events and contribute to higher levels of self esteem and confidence in the student. [91] From the recess observations both SDHH and hearing in this study made close friends easily. This coincides with another study that found SDHH' friendship qualities and levels of well-being were similar to their hearing peers. [90] It would be worthwhile to encourage this friendship type in schools and universities.

In our study the SDHH from the high school and the university were satisfied with lives and achievements this coincides with other study that reported that students who are more satisfied with their lives invest more in their friendships and develop a higher friendship quality than students who are less satisfied with their lives. The relationship of mixed friendship quality and life satisfaction was moderated by age: the effect was only visible in students who were 21 years or older. [90] in our study, however, we saw this among students from 15-21.

This life satisfaction amongst the students in this study could be related to that fact that many deaf students persevere and cope with environmental obstacles and may actually perceive themselves as having more coping skills than what hearing students perceive they have. Coping is an interactive process that is affected by situational, social support, and personal characteristics [92].

Most of the students surveyed in our study were happy with themselves and satisfied with their situation in the private setting. This coincides with one study that found that children enrolled in schools for the deaf also were seen by both their parents and themselves as more socially successful than those in mainstream schools.

The majority of students in this study felt their parents were happy with them for studying further at school. The parents of deaf children perhaps may not feel skilled enough to communicate with their deaf children. [57] Hence getting this education will help them in the future. One study suggests that mothers who can communicate better with their deaf child may also feel more at ease to interact with their child in settings other than the home [85].

In our study we did ask about the parental hearing status of the participants but it was not answered. In future studies easier ways to answer this could be introduced. One study suggests that deaf children with deaf parents had higher self-esteem than deaf children with hearing parents. [1] This finding is consistent with other research findings that suggest a positive relationship with family orientation to deafness and self-esteem [93,94,95].

In addition negative parental reactions about the child's deafness, as well as lack of understanding about means of interacting with a deaf child, can result in family interactions that are inappropriate that can contribute to negative self-perceptions. In our study not all the parents could understand their children when they got upset about

something. Furthermore, negative social perceptions may validate negative internal self-perceptions [96,97].

The university SDHH in this study used sign language to communicate and one study suggests that a key element in the role of identity development may be parental hearing status and sign language usage. They suggest that those who grew up with parents who are deaf may be likely to regard deafness as a cultural standing rather than a disability. [89] In addition, most hearing parents of deaf children do not use sign language to communicate. In addition, self-esteem scores were higher among deaf people who used sign language. Related to group identification, the more strongly one identified with being a member of the Deaf community, the higher the self-esteem scores [1].

Communication issues affect the entire family, including both hearing and deaf members. Even when hearing family members learn to sign, most never attain high levels of fluency. Thus, a deaf family member may still be excluded from informal and incidental conversations involving the hearing family members. Thus, it makes sense that if minority group members are treated with disdain, one would expect members of that group to have low self-esteem. If supportive environments help protect minority group members from the negativity such as peers in the university of the dominant group, members may not necessarily absorb these negative values [98].

Socioeconomic status may have a greater impact on the academic attainment of deaf children than that of hearing children. This is because hearing children, no matter how poor, can acquire language by merely listening to family members who speak to them from infancy. By contrast, poor deaf children are at a high risk for not being exposed to accessible language at the right time in early childhood. [88] This is another factor we included in our study but was not answered by the students different ways to answer this in the future could be developed. These findings suggest that there are differences between deaf and hearing students who are transitioning to college with regards to their social-emotional adjustment. This coincides with another study that had similar findings [99].

The lack of interaction in our study between gender, hearing and social performance coincide with those of another study that also found that gender did not interact with social status [100].

We only used females students in our cohort and maybe other studies could explore males well to see if there are differences in the perceptions. However one study suggests that gender differences appear to have little impact on self-esteem and a possible explanation is that when men and women are mutually dependent and work cooperatively, antagonism between the genders is much lower. Perhaps when men and women are in a nurturing and supportive environment, they feel good about themselves equally. There is less antagonism, which in turn creates a less tense environment when there is no one group that reigns over another. [101] In our study the interactions with males are minimal so this may create some antagonism. Future studies could look into this as well if there is a difference in making friends between male and female SDHH as well as the types of friendships made in KSA.

The students in our cohort also had clear goals and felt they could achieve the impossible. Having clear goals and commitments are highly relevant to deaf students in terms of finishing their education. If one has no clear career goal upon entry to college, persistence is enhanced if one does by the end of the first year [43,44].

What was worrying in the study was the lack of support services available to some of the students and even a number of students did not know of support services available to them. This was especially true for the university students. It may be that support services were not as widely available to them when they were growing up as they are now for the high school students. This could affect their social-emotive well being if they feel there is no support for them. More workshops to educate the students on what is available to them could be beneficial for the future intake of students. Services available in Saudi Arabia for the deaf community include financial allowances, free hearing aids, Sign Language news programmers, medical services, Deaf education and vocational Training. However, accessibility by the introduction of more professional interpreters needs to be improved [102].

5. Implications for Research

One of the difficulties of a study of SDHH in the private schools is the issue of sample representativeness. In particular for KSA, there are a number of deaf students that are not registered with any system.

A second limitation is that the results only reflect initial academic success in college during the first quarter of study. Further research needs to extend the findings to second-, third-, and fourth-year persistence and success. Future research should also examine these variables with deaf students in 4-year bachelor degree programs. As Around 30% of deaf students graduate from 4-year programs compared to about 70% of their hearing peers [103].

These results are for a sample of students in one area of KSA, to get a better representation, a nationwide study could be a next focus of research.

The instrument covered a breadth of domains, yet not any one domain in depth. In addition, the insight into the student's social-emotional adjustment is limited to the students self-report. More work on the definition of friendship in Saudi Arabia could be investigated as one study has shown that the definition of a friendship differs between the United States and Europe [90].

6. Recommendations

Some schools have tried types of "learning communities" to encourage early academic and social integration.

A learning community involves linking courses, instructors and students together to increase contact among students and faculty, and to create linkages between academic disciplines [104,105].

Barriers to understanding could be prevented by introducing sign language in a number of schools and universities.

Saudi society is becoming more accepting to these students with hearing loss; there are more government services available as well as entrance to universities in the KSA region.

More facilities should be available for SDHH and normal hearing students to interact, as well as more workshops in Hail to help us understand about deafness and its effects on society.

More assistance to deaf students in their classes such as longer lesson periods, hearing students who know sign language to be buddies for them, more access to support services outside school and easy access to interpreters could aid in their transition from high school to university.

Faculty giving increased attention to personal factors, as well as metacognitive skills, may provide the necessary boost for more deaf students to persist and succeed in college.

This opens up the possibility of developing new rehabilitation and training programmes to help young people with hearing disabilities acquire more positive self-assessments [90].

7. Conclusions

Perspectives of the SDHH have been an invaluable tool in this study for assessing their social emotive performance.

For this group of SDHH, communication remains a barrier to them compared to normal hearing peers.

The SDHH in this study had positive attitudes towards achieving their goals, making friends and their well being and this could be encouraged in the future by teachers and parents.

A number of SDHH in this study did not know of the government support available to them nor had no government services available.

Conflicts of Interest

There are no conflicts of interest in this study

Authors Contributions

MA wrote part of the paper and prepared a lot of the questions in the survey. AA and NM collected students, composed surveys and distributed surveys. NA provided all the data analysis. LA and AA translated surveys for the students into Arabic from English and vice versa as well as data analysis. SA wrote most of the paper and was the PI for the project.

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Appendix

Life Difficulty Questions

Sample Items of Life Difficulties Questionnaire	5 agree	4 stongly agree	3 neither	2 strongly disagree	1 disagree
Discouragement					
1. I often have moments when my life seems lonely and empty.					
2. I feel that there isn't much in life that's worth doing.					
Worry					
1. I have very strong fears of particular places or things. habits.					
Anger/aggression					
1. I am known to have a terrible temper.					
2. Sometimes I feel angry enough to hurt someone badly.					
3. I have been in a bad fight within the past year.					
Context home					
1. I have had a lot of stress lately at home.					
2. I find myself arguing and fighting a lot at home.					
3. I have run away from home, or tried to.					
Context school					
1. I have had a lot of stress lately at school.					
2. I get upset at the way teachers and others push me around.					
3. I have sometimes gotten in trouble at school.					
Coping					
1. I feel ok about my ability to do whatever I set out to do.					
2. I have a group of friends with whom I feel comfortable.					
3. Most problems in life can be solved by thought and persistent effort.					

Ego Questions

	1. STRONGLY AGREE	2. AGREE	3. DISAGREE	4. STRONGLY DISAGREE
1. I feel that I am a person of worth, at least on an equal basis with others.				
2. I feel that I have a number of good qualities.				
3. All in all, I am inclined to feel that I am a failure.				
4. I am able to do things as well as most other people.				
5. I feel I do not have much to be proud of.				
6. I take a positive attitude toward myself.				
7. On the whole, I am satisfied with myself.				
8. I wish I could have more respect for myself.				
9. I certainly feel useless at times.				
10. At times I think I am no good at all.				