

Student's Psychology During The Covid-19 Pandemic: A Comparative Study Between Vocational And Technical Training Students

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ABSTRACT: The world has recently suffered from the repercussions of the COVID-19 pandemic, as the number of victims of this epidemic has increased significantly, and people have lost their families and loved ones in a short time. The feeling of inability to face the difficulties resulting from this pandemic had bad repercussions on the mental health of many people, especially those with disabilities, who faced difficulty in continuing their already unstable daily routines. In this work, a comparative study is carried out to determine the impact of the COVID-19 pandemic on the morale of the vocational program students. The study concerns non-disabled students and deaf, hard-of-hearing students. For this, a DASS test was applied to extract the states of stress, anxiety, and depression. A second test called MFT is applied to extract the main causes and effects. The results are surprising since all cases show a negative effect on the part of deaf and hard of hearing compared to other students.

Keywords: Covid-19, Vocational And Training Program, Depression, Stress, And Anxiety



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INTRODUCTION

All over the world, many countries have decided to take the necessary precautions in times of coronavirus. The aim was to protect citizens and prevent the spread of the virus. The population is therefore in forced confinement. People did not know the duration of this confinement and hoped that this process would end quickly. This sudden change in the rhythm of life generated moral and psychological pressure. The moral health of many people was affected. According to our bibliographical research, on average 30% of the world's population suffers from problems of stress and depression. The same problem was experienced by ordinary university students and deaf, hard-of-hearing students. Technical colleges in the Kingdom of Saudi Arabia accommodate healthy trainees and trainees with disabilities. The units taught at these colleges are largely practical and most courses take place in the laboratory. During the Corona pandemic, healthy trainees were able to attend some courses thanks to distance learning methods and technologies available during the crisis. In contrast, students with disabilities could not understand distance learning courses or communicate with their professors and classmates. This research is based on comparing the extent

of the Corona crisis's impact on the two categories of trainees in terms of psychological and mental health. This study aims to provide scientific results on the capacity of educational and administrative responsibilities to provide appropriate conditions and avoid gaps in the future. Based on the carried out study by (Denden & Alkhalifah, 2023a), the goal of this work is to conduct a comparative study of the effects of the pandemic on ordinary students and those with disabilities in the case of vocational education. The study is carried out only for students belonging to technical universities in Saudi Arabia.

RELATEDWORKS

In the literature, many researchers have studied the impact of the COVID-19 pandemic on population psychology (Arsandaux et al., 2020). The impact of the pandemic differs from country to country. The impact of the pandemic on deaf, hard-of-hearing people has also been studied in this context. In (Swanwick et al., 2020), the authors studied the psychology of deaf adults in Ghana. The authors used a quantitative survey and qualitative interviews. The main questions and interviews in the study focused on the impact of the pandemic on education and health. Results showed a significant impact on participants' morale, with the main cause being a lack of access to information and the conflict of pandemic news. These factors increased the anxiety level of the participants, and their education was significantly disrupted. During the pandemic, many countries imposed full or partial lockdowns. Students then turned to remote education courses (Adigun, 2022; Mallhi et al., 2022; Mazza et al., 2020; Mulla, 2022). However, remote education was not easy to achieve and posed technical and material challenges for normal students in general (Wang & Lin, 2021) and even more so for deaf, hard-of-hearing students (Aljedaani et al., 2023). In Saudi, the authors' work in addresses the issue of distance learning for deaf, hard-of-hearing primary school students during covid-19 (Aljedaani et al., 2021). Parents of primary school students are asked about the behavior of children during COVID-19. These parents confirm that they faced profound challenges. For example, the main issue was the process of communicating with their teachers using an e-learning approach. On the other side, the study of (Almarri et al., 2022) involves medical students; it aimed to determine the effect of the pandemic on their career choices. Results show that 4 out of 10 students were influenced by their medical career choices. The study of (Hassan et al., 2021) was conducted to determine the emotional health of several college students during the COVID-19 pandemic. The results show an increase in vulnerability to stress, especially for female students who have been more affected by the consequences of the pandemic. The authors of, investigated the challenges and difficulties faced by teachers when e-learning in the Najran region of Saudi Arabia (Wahsheh, 2023). Results revealed significant statistics on the degree of use of e-learning and provided recommendations for better exploitation of this innovative technology.

As in other countries around the world, deaf, hard-of-hearing students in Italy have suffered from distance online learning technologies. Baroni's study, shows a great challenge for this category of students to communicate remotely with their teachers (Baroni & Lazzari, 2020). In the same study, teachers also reported difficulties in adapting to distance communication techniques, particularly in providing educational tools and software to deaf students.

In Indonesia, in the study of (Mabrur et al., 2021), the authors appreciate the role of distance education and its support for deaf students in Indonesia, but they also criticize the lack of advanced visual communication tools. They also advise the need for support for this category of students. Likewise, the authors in used the classroom action research (CAR) model to determine how far the improvement of student learning outcomes (Susanto & Zaya, 2023). The study proved its efficiency during the Covid-19 pandemic. In the paper of (Maspul, 2024), the authors studied the influence of poetry classrooms on student psychology. The studies showed a positive learning atmosphere introduced by using this type of class. The study confirmed that students were more relaxed, understanding and collaborative.

Previous studies agree that the COVID-19 pandemic has hurt the quality of education for deaf, hard-of-hearing students and subsequently on the moral state of students, highlighting the need for advanced technological resources and support heightened human for deaf students. In the article (Alkhalifah & Denden, 2023), the authors studied online learning challenges for deaf and hard-of-hearing Saudi students during the COVID-19 pandemic. The results show that online learning includes a lack of accessibility features such as closed captioning and sign language interpretation, and a difficulty in lip reading by videoconferencing. The study also highlights the unique challenges deaf and hard-of-hearing students face in social interaction and peer communication during online learning.

In the article, (Tomasuolo et al., 2021) the authors studied the negative effects of the COVID-19 pandemic on deaf, hard-of-hearing people in Italy. The study shows that the lockdown and closure of sign language interpreting services have resulted in increasing social isolation for deaf people. The study showed also difficulty adapting for the Italian community to new distance communication technologies. The authors of the paper asked officials responsible for additional support to this community category. Overall, the document provides interesting results that can be exploited not only by experts in Italy, but also by the rest of interested parties around the world.

Deaf, Hard-Of-Hearing Students In The World

Deaf, hard-of-hearing people collect information about the environment, time, and state around them in a different way than people who can hear (Jadir, 2022). The interpretation of these data is also different. They have a different logic of interpretation and understanding. They then develop other ways of thinking. To overcome the problems of communication with others, deaf, hard-of-hearing students are used to collaborating and frequenting shared places such as homes for the deaf, reserved centers, etc. They evolve according to their collective presence. During the pandemic, these students lost this characteristic due to partial or total confinement. During the pandemic, each deaf, hard-of-hearing student is alone and communication with others is done in most cases in pairs. Our study shows that these students lost the advantage of collective work and group communication since the technological tools were not sufficient. Normal university students use several methods and tools to follow their courses, they can communicate directly with their professors, take notes, record lessons, ask questions at any time, and remain in interaction with the university teaching environment.

Deaf, hard-of-hearing students have difficulties using the same methods and tools. For example, it is difficult to understand and take notes at the same time, it is also difficult to follow their teachers and ask questions. In addition, few of the university staff understand and practice sign language. This challenge is an intense communication problem for this student category (Godwin-Jones, 2019). All these challenges lead the deaf student to become discouraged, to enter the spiral of dropping out and to lose many of these skills. The World Health Organization says that by 2050, nearly 2.5 billion people will suffer from some degree of hearing loss (WHO, 2023). This number is important, plans and strategies to support the integration of this student category must start immediately.

Note: In the rest of this paper, we will use the abbreviation: DH student to refer to deaf, hard-of-hearing students and N students to refer to normal students who do not have any disabilities.

Science has played a major role in the dissemination of knowledge among different social categories (Ghannay et al., 2008; Kurdi et al., 2024). With the multiplicity of communication tools, the web, social networks, and audiovisual communication tools, it has become easy to raise citizens' awareness of the risks and epidemics that threaten their lives and disrupt their daily activities. COVID-19 is just one of the cyclical challenges facing humanity.

Deaf And Hard-Of-Hearing Population In Saudi

According to the statistics issued by the Department of Statistics in Saudi Arabia (General Authority for Statistics Saudi Arabia), the percentage of persons with disabilities (various levels) is estimated at 7-10 percent of the population. Table 1 summarizes the disability statistics in the Kingdom for the recent years. These values can be updated with time.

Table 1. The Deaf, hard-of-hearing population in Saudi Arabia

Disability	Hearing impairment	ADHD	Mobility disability	Autism Spectrum Disorder	Down syndrome	Visual impairment
Number	289355	30.155.0000	833.136	3,282	19,428	811,610

METHOD

1. Sampling

This study consists of collecting information by asking directly students. The participants are part of the Higher College of Telecommunications and Information of Riyadh (CTI). The number of N students is 152 and the number of DH students is 73. Table 2 describes the distribution of these students according to their level of studies.

Table 2. Participants study level

	Level 1	Level 2	Level 3	> Level 3
N students	24.4	35.5	40.1	0
DH students	47.2	36.1	11	5.7

Statistical methods such as SD, Pearson's correlation coefficient, and means are evaluated using the collected information.

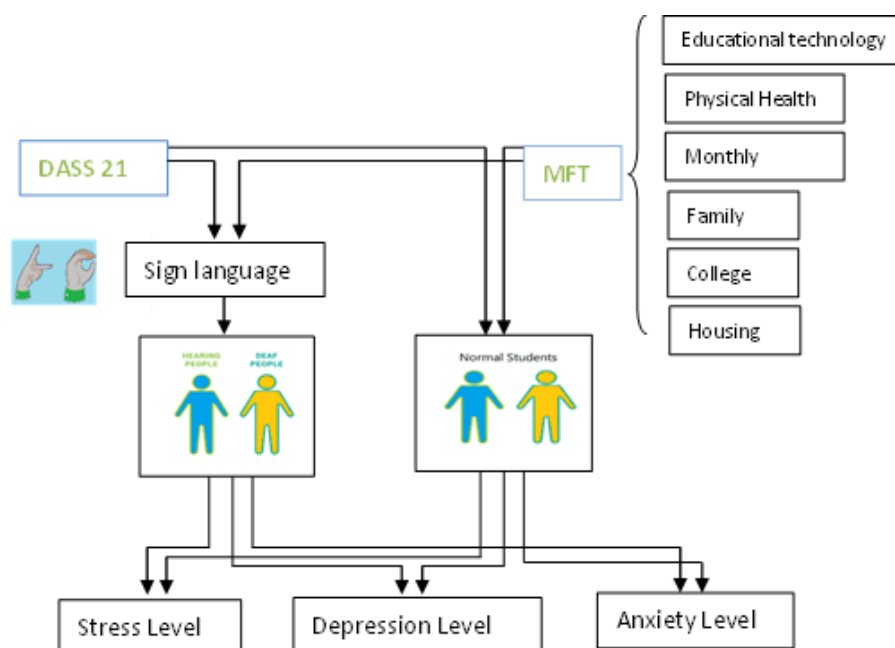
2. Data collection

In this study, the standard DASS21 test is applied in the first step and the MFT (Main Factor Test) (Denden & Alkhalifah, 2023b) test is applied in the second step. The DASS test is used to determine the level of depression, stress, and anxiety. The Arabic version validated by (Al Omari et al., 2020) is used. Socio-demographic questions are also used to collect information about participants. The DASS assessment standard (a 21-point Likert scale) was also the DASS abbreviations used are: where 0 = does not apply to me at all; 1 = applies to me to some extent, or some of the time; 2 = applies to me to a great extent, or a good part of my life, and 3 = applies to me a lot or most of the time.

3. Measurements

In this study, we applied for two different tests; the first one is the Arabic version of the DASS-21 standard (Kovess-Masfety et al., 2016; Verger et al., 2009) . The second one is the MFT test (Main Factor Test) inspired by the work of (Feres et al., 2020; Kessler et al., 2007) . The study consists of questioning the two student categories about friends, family situation, monthly income, availability of online courses, online exams, psychological background, and essentially about educative technology. Figure 1 explains the approach applied in this study. To apply the two tests to deaf, hard-of-hearing students, we called on pedagogical experts and others in sign language translation. The questions are posed directly to the students.

Figure 1. Proposed questionnaire model



Ethical Considerations

Before beginning this study, we obtained intentional committee agreement from both "Computer and Information Technologies " and "special techniques" departments. In addition, we alert participants that this study is purely voluntary and has the objective of scientific research in compliance with the standards of the institutional international research committee.

RESULT AND DISCUSSION

Results of this study group information and answers for the two questionnaires, the first one is the DASS test which is used to collect information about Depression, Anxiety, and stress. The second one is the MFT test used to collect information about social conditions, family situation, academic conditions, and financial level. All this information was introduced and analyzed with SPSS software. we calculated in each phase the standard deviation SD, the Pearson correlation, and means values. In next part, we will analyze and justify step by step these results.

Population

The mean age of participants for the two student categories is grouped in Table 3. The mean age of the CTI for both N and DH students is 21 years. The minimum age is 19 and the maximum is 27 years. The majority (91 %) of DH students have a hard hearing problem. The N student number was 152 and the DH student number was 73. All students belong to CTI College and all of them are boys (No female students in CTI College).

Table 3. Socio-demographic factors among participants

	Percentage DH students	Percentage N students
Age group (Mean± Std Deviation)	52.8%	52.8%
18-20	12.5%	12%
21-23	30.6%	52.8%
24-26	30.6%	35.2%
>26	26.4%	0%

Prevalence: DASS Test

The results are obtained using SPSS V29 and displayed in Table 4. For N and DH students, depression scores were slightly higher than anxiety and stress scores (Mean 1.56, SD 6.2 vs. Mean 1.5, SD 6.8, and Mean 1.2) for N students and (Mean 2.83, SD 1.4 vs Mean 2.67, SD 1.37 and Mean 2.71, SD 1.39) for DH students.

Table 4. DASS prevalence and scores

	DEPRESSION LEVEL		ANXIETY LEVEL		STRESS LEVEL	
	DH students	N Students	DH students	N Students	DH students	N Students
Valid	73	152	73	152	73	152
Missing	0	0	0	0	0	0
Mean	2.83	1.5658	2.65	1.5066	2.71	1.2829
Variance	1.96	1.068	1.89	1.126	1.95	0.535
Minimum	1.00	1.00	1.00	1.00	1.00	1.00
Maximum	5.00	5.00	5.00	5.00	5.00	5.00

Prevalence of depression

The prevalence of depression is mentioned in Table 5, it shows a percentage of abnormal depression equal to 72.4 % for N students against only 34.2 for DH students (Normal level). For mild level, results show 8.6 % for N students against 2.7% for DH students. For the moderate level, a percentage of 11.2 % for N students against 6.8% for DH students is noted. Concerning the last level (severe), results show a percentage of only 5.9 % for N students against 56.2% for DH students. This last result was not expected. The depression level for DH students is strongly higher than for N students.

Table 5 Prevalence of depression

	Depression Level							
	Frequency		Percent		Valid Percent		Cumulative Percent	
	DH students	N students	DH students	N students	DH students	N students	DH students	N students
Normal	25	110	34.2%	72.4%	34.2%	72.4%	34.2%	72.4%
Mild	2	13	2.7%	8.6%	2.7%	8.6%	37%	80.9%
Moderate	2	17	6.8%	11.2%	6.8%	11.2%	34.8%	92.1%
Severe	5	9	56.2%	5.9%	56.2%	5.9%	100%	98.0%
Total	73	152	100.0	100	100.0	100		

Prevalence of anxiety

Table 6 shows the level of anxiety for the two student categories. Results show a percentage of normal depression equal to 76.3 % for N students against 37.0% for DH students. The mild level is 9.2 % for N students against 4.1% for DH students. For moderate level, results show a level of 5.9 % for N students against 13.7% for DH students. Results also show a level of 4.6% for N students against 45.2% for severe level. Like depression results, anxiety for DH students is more important than N students. For DH students the severe level reaches ten times the case of N students.

Table 6. Prevalence of anxiety

	Anxiety Level							
	Frequency		Percent		Valid Percent		Cumulative Percent	
	DH students	N students	DH students	N students	DH students	N students	DH students	N students
Normal	27	116	37.0%	76.3	37.0%	76.3	37.0%	76.3
Mild	3	14	4.1%	9.2	4.1%	9.2	41.1%	85.5
Moderate	10	9	13.7%	5.9	13.7%	5.9	54.8%	91.4
Severe	33	7	45.2%	4.6	45.2%	4.6	100%	96.1
Total	73	152	100.0	100.0	100.0	100.0		

Prevalence of stress

Table 7 shows a percentage of stress equal to 84.9 % for N students and 37 % for DH students. A percentage of 4.6 % for N students against 2.7 % for DH students in the case of mild level is noted. A percentage of 11% against 8.6 % for the case of moderate level is presented. Finally, only 2 % for N students against 49.3 % for DH students in the case of the severe level stress is noted. Compared to the literature (Feres et al., 2020), the stress percentage in this study is low for N students but strongly high for DH students.

Table 7. Prevalence of Stress

	Stress Level							
	Frequency		Percent		Valid Percent		Cumulative Percent	
	DH students	N Students	DH students	N Students	DH students	N Students	DH students	N Students
Normal	27	129	37%	84.9%	37%	84.9%	37%	84.9%
Mild	2	7	2.7%	4.6%	2.7%	4.6%	39.7%	89.5%
Moderate	8	13	11%	8.6%	11%	8.6%	5.7%	98.0%
Severe	36	2	49.3%	1.3%	49.3%	1.3%	100%	99.3%
Total	72	152	100.0	100.0	100.0	100.0		

Even percentage values of depression, anxiety, and stress are considered low compared to university students, in France for example (35% for depression). However, this ratio raises concerns and questions, because a quarter of students suffered from depression, whether moderate or severe. Does education technology, and the nature of practical studies for this student category impact the mental health of the trainee during the COVID-19 period? We will try to get answers with the MFT test in the next paragraph.

MFT Test

To understand the DASS test results and interpret the levels of stress, depression, and anxiety, a second test called MFT was applied. It consists of asking other types of additional questions to determine the causes, other than COVID-19, which have helped DH students or, on the contrary, have increased the levels of stress, depression, and anxiety. The MFT test is based on the work carried out by (Kessler et al 2006), (Feres et al 2020), (Author, 2023) and (Author et al 2023). The MFT test is translated by pedagogical and linguistic experts into sign language.

1. Educational environment

a. Interaction with teachers

To minimize the rapid spread of the Coronavirus, all citizens were required to wear masks, including teachers. For normal students, this was not a problem since most classes were held remotely and they did not need to make a big effort to communicate with their teacher. For the DH students, it was a problem for them, our study shows that the wearing of the mask by the teachers was an obstacle to understanding the messages and communicating with

their teachers since they were used to understanding the messages of their teachers following the movement of their lips. A percentage of 55.6% of DH students expressed concern about wearing a mask during the COVID-19 pandemic and felt that the mask prevented them from understanding their lessons, 18.1% of students had moderate opinions and 26.4 % say the mask did not cause them a communication problem.

b. Teaching modules and exams

Modules taught at the CTI College have a practical aspect. Practical work takes place in the school's laboratories. The presence of students is therefore essential. The normal rhythm of these courses is disrupted during the COVID-19 pandemic. Total confinement interrupted this technical training, and deaf students had no choice to go to school in deplorable conditions. Moreover, only 51.4% of these courses are recorded. These students' assessments, tests, and examinations were also done at the school.

2. Social environment

a. Family support

MFT test indicates a percentage of 91% of DH students live with their family, 54.2 % of them have a quiet study place at home and 87% of trainees have kept the same accommodation (Table 8)

b. Extra jobs

A percentage of 40.3 % of DH students live with their family, 54.2 % of them have a quiet study place at home and 87% of trainees have kept the same accommodation (Table 8).

Table 8. Educational and social environment

	N students	DH Students
Life with family	88%	91%%
Quit study place	81 %	54.2%
Same accommodation	82%	87%
Online courses	46.7%	51.4%
Record courses	51.4%	91%
High Internet connection	70%	81%
Remote Software	√	√
No Extra time works	75%	59.7%
Online available courses	91%	51.4%
Scholarship	75.6%	96%
Alcohol or drugs	0%	0%

c. Associative activities

In addition, associative activities have decreased during the pandemic. DH students have lost an important asset in their communication. Usually, associations bring together deaf students and allow them to communicate together and help each other.

CONCLUSION

The study of this work provided an overview of the psychological effects related to the spread of the epidemic among two technical and vocational student categories in Saudi Arabia. The depression, anxiety, and stress DASS is applied to ordinary students and then translated into sign language to be applied to deaf, hard-of-hearing students. According to our bibliographic research, there has been no study involving this student category before. The study showed a high level of depression, anxiety, and stress among students with disabilities. For the depression level "severe", results show a percentage of only 5.9 % for Normal students against 56.2% for Deaf and Hard of hearing students. It's a hard value for depression level for DH students compared to their colleagues. The same conclusion for anxiety and stress factors, the gap is still important between the two student categories, a value of 45.2 against 4.6 is noted for anxiety, and a value of 49.3 against 2 is shown for the stress parameter. This comparative study showed that DH students encountered two main challenges, firstly, the program studied is based on practical aspects and the majority of the modules take place in the laboratory this has been a real problem during the pandemic because distance learning technology does not work much with the majority of the modules studied in the laboratory. The second challenge is that DH students are shaken by the pandemic because it has been impossible for them to continue their studies remotely. Compared to N students, DH students are the most affected by the pandemic. Results can be used by university administrations, teachers, developers, social associations, and psychiatrists not only to establish emergency and security plans but also to think about the evolution of distance learning technology. The students of the training and vocational program, particularly DH students of this program are the most considered persons by these parameters.

The results of this work need to be enhanced by considering other parameters, for example, the participant's sanitary history is not known, and this work admits that there were no such problems before. The exact degree of increase in depression, anxiety, and stress levels compared to previous levels is not very well known. This requires further research and collaboration to see how these results might change over time. It is also necessary to know precisely whether the pandemic has a short- or long-term impact on the participants' psychological health.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

Ethical standards

The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008.

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