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Inclusive Higher Education in United Arab Emirates: Will Perceived Knowledge of Inclusion Impact Positively on University Students' Attitudes Towards Learning With Peers With Disabilities?

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Inclusive education is widely acknowledged as useful in promoting the involvement of all students. One core objective for the implementation of inclusive education is to promote acceptance and peaceful co-existence between students with disabilities and typically developing peers in classrooms. Since 2006, the federal government of the United Arab Emirates (UAE) has developed policies aimed at achieving inclusive education at all academic levels. However, the link between typically developing students' perceived knowledge of inclusive education and their attitudes towards their peers with disabilities is understudied in the UAE context, especially at the university level; hence, this study aspired to assess those views. A revised Chedoke-McMaster Attitudes towards Children with Handicaps (CATCH) scale was adapted and completed by 233 university students. The data were subjected to a *t*-test, an analysis of variance (ANOVA), and linear regression. The findings showed feelings of negativity towards peers with disabilities. Interestingly, those who indicated they were unaware of inclusive policies held more positive perceptions of their peers with disabilities than those who stated otherwise. The study's limitations, recommendations for future research, and implications for policymaking and practices are also discussed.

Keywords: inclusive education, students with disabilities, typically developing students, attitudes, inclusive policies

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INTRODUCTION

Inclusive education is globally accepted as a useful approach towards promoting the learning of all children (Ainscow and Sandill, 2010; United Nations Educational, Scientific and Cultural Organization (UNESCO, 1994). Systematic barriers are erected against minority groups in society, such as students with disabilities (World Health Organisation (World Health Organisation, 2011). For instance, they are denied basic services contributing to their inability to participate in society, culminating in negative attitudes of society towards them. In light of this, international advocacy and campaigns communicated through policy documents, as well as various international treaties such as the Salamanca Conference on Special Needs Education (UNESCO, 1994), the UN Sustainable Development Goals (SDGs;

United Nations, 2015) and the Convention on the Rights of Persons with Disabilities (United Nations, 2007) – have exhorted countries to reform their system to change societal attitudes and promote acceptance of individuals with disabilities in societies. The implementation of inclusive education has been envisaged as a commitment by countries to encourage the acceptance of individuals with disabilities in societies. Indeed, many countries, including the United Arab Emirates (UAE), have adhered to the global call to practise inclusive education and put mechanisms in place to enhance equal access (Gaad, 2019; Knowledge and Human Development Authority (Knowledge and Human Development Authority, 2017; Knowledge and Human Development Authority, 2019a; Knowledge and Human Development Authority, 2019b). While there is a consensus on the need for broad stakeholders to contribute to the successful implementation of inclusive education (Knowledge and Human Development Authority (Knowledge and Human Development Authority, 2017), in the UAE, the perspectives of typically developing university students regarding studying in one classroom with peers with disabilities have not been thoroughly looked at.

We employed Sharma et al. (2017) definition of inclusive education to guide this study, whereby the term denotes creating an opportunity for the participation of students with disabilities. While students with disabilities refer to students living with a form of impairment, such as sensory, physical, or cognitive impairment, which may impact their day-to-day living experiences (World Health Organisation, 2011), typically developing students refer to students who are not living with any form of impairment. The obstacles individuals with disabilities face cannot be overstated (Morgan, 2021; Sharma et al., 2017; World Health Organisation, 2011). For instance, in the UAE context, society still harbours negative attitudes, such as rejection of children with disabilities and their families as well as their inability to access education and jobs due to a lack of trained professionals (Dukmak, 2009; Gaad and Almotairi, 2013; Alkhateeb et al., 2016; Morgan, 2021). To improve their acceptance, having them learn in the same classroom with typically developing peers increases their understanding of disability and promotes their acceptance in society (Ainscow and Sandill, 2010). This not only boosts their involvement in classroom activities and social events in their communities, but also allows typically developing students to recognise their strengths and include them in happenings outside of the classroom (Ashman, 2015). Such achievements serve as the building blocks for creating a society where diversity is not only tolerated, but celebrated. The significance of peer relationships gives support to comprehending the attitudes of typically developing university students towards peers with disabilities in the UAE.

Research Contexts

The UAE is located in Western Asia with an estimated population of 9 million and comprises a confederation of seven sheikhdoms: Abu Dhabi, Ajman, Dubai, Fujairah, Ras Al Khaimah, Sharjah and Umm Al Quwain (Gallagher, 2019). The UAE is regarded as a modern state, with education centred at the heart of its development. Consequently, mechanisms have been put in place to promote access to education to all (Knowledge and Human Development Authority, 2017; Knowledge and Human Development Authority, 2019a; Knowledge and Human Development Authority, 2019b). Public education is free and compulsory for all Emirati children between 6 and 12 years of age. It is unsurprising that as of 2018, less than 1% of the population were illiterate (Gallagher, 2019). There is also a proliferation of fee-paying private schools, which gives parents the choice to decide the best environment to educate their children (Gallagher, 2019). However, the government maintains an oversight responsibility to make sure that private schools are providing equitable access to education to both citizens and residents.

Inclusion, at all levels of society, is at the forefront of national development in the UAE (Knowledge and Human Development Authority, 2019a). For example, individuals with disabilities are referred to as persons with determination who are being encouraged to access essential services such as education in society (Knowledge and Human Development Authority, 2017; Knowledge and Human Development Authority, 2019a; Knowledge and Human Development Authority, 2019b). Historically, those with disabilities were denied access to quality education (Anati, 2013; Gaad, 2011, Gaad, 2015; Knowledge and Human Development Authority, 2019a, Knowledge and Human Development Authority, 2019b), and some continue to access education at special schools, which is known in UAE as centres for persons with determination (Gaad, 2011; Gaad and Almotairi, 2013). Due to the misconception and denial of basic rights to individuals with disabilities, the federal government has taken steps to improve service provision, such as accessible education to all (Knowledge and Human Development Authority, 2017; Knowledge and Human Development Authority, 2019a; Knowledge and Human Development Authority, 2019b). In response to the worldwide call to realise inclusive education, in 2006, the government passed Federal Law No. 29 regarding the Rights of Persons with Special Needs, which affirms the need for all schools to promote the involvement of children with disabilities (Knowledge and Human Development Authority, 2019b). This legislation was followed by Federal Law 116 of 2009 and the passage of the School for All Policy in 2010, where the leadership of the UAE made strong pronouncements for the implementation of inclusive education for all students (Knowledge and Human Development Authority, 2019b). In line with best inclusive practises, the state governments developed policies, such as the Dubai Inclusive Education Policy Framework, which aims to make all schools inclusive by 2020 (Knowledge and Human Development Authority, 2017; Knowledge and Human Development Authority, 2019b). While these policy documents are comprehensive and provide useful directions for executing inclusive education, there is a lack of information regarding how to foster relationships between students with disabilities and their typically developing peers.

Previous studies in the UAE on inclusive education have mainly been limited to teachers and teaching activities in primary and secondary school classrooms. For example, empirical evidence has shown that teachers still struggle to

teach students with disabilities (Alborno and Gaad, 2014; Alghazo and Naggar Gadd, 2004; Arif and Gaad, 2008; Calderon, 2013; Gaad and Almotairi, 2013; Alborno and Gaad, 2014; Alkhateeb et al., 2016; Saqr and Tennant, 2016; Alborno, 2017). In a review of the literature on the inclusion of students with intellectual disabilities in UAE and other neighbouring countries, Alkhateeb et al. (2016) revealed barriers to their involvement (such as a lack of resources and funding), which adversely impacts efforts to bring about inclusive education. In a quantitative study, Gaad and Almotairi (2013) investigated university teachers' perceptions towards teaching students with disabilities; they discovered that teachers felt negatively about including them in lessons. In a related study, Anati and Ain (2012) scrutinized 26 primary and secondary school teachers' views on implementing inclusive education in the UAE. Various factors, including a lack of funding, special educators, and finances to obtain teaching and learning materials, were found to impact negatively on the inclusion and teaching of students with disabilities. While teachers' attitudes towards such students have received some attention in the UAE context (Arif and Gaad, 2008; Calderon, 2013; Gaad and Almotairi, 2013), the perspective of university students towards peers with disabilities is understudied.

The university is the next Frontier for the implementation of inclusive education in countries such as the UAE. Unfortunately, empirical studies on the attitudes of typically developing students towards their peers with disabilities are non-existent in the UAE context. This probably underscores the need to understand whether students' knowledge about inclusive education could impact their attitude towards learning in the same classroom with peers with disabilities.

Attitudes Towards Students With Disabilities

In efforts to implement inclusive education, attitudes have been identified as the first step in having all students learn in one classroom (De Boer et al., 2011). One of the most important steps towards increasing commitment to inclusive education is improving the attitudes of stakeholders, such as students, towards learning in the same classroom with students with disabilities. However, attitudes could only be improved if there is baseline information about practices in schools. This calls for studies to develop a deeper understanding of the attitude of a given stakeholder group, such as students with disabilities, towards inclusive education. Indeed, the views on inclusive education remain one of the most researched areas in the field of inclusive education (e.g., De Boer et al., 2011; Srivastava et al., 2017). As a psychological construct, it is a key component of theories, such as the theory of planned behaviour (Ajzen, 1991) and the theory of reasoned action (Fishbein and Ajzen, 1975), which provides an understanding of the intention of individuals towards a given behaviour. Ajzen, (1991), Ajzen, (2011) suggested that behavioural, normative and control beliefs combine to predict intentions towards a given behaviour. In this study, attitude was conceptualised as typically developed university students' predisposition towards learning in the same classroom with peers with disabilities. In the event where typically developing students see it in a positive light, the associated perception is likely to be positive.

In inclusive research, attitudes are believed to be made up of three related constructs: 1) cognitive, 2) affective and 3) behavioural aspects (De Boer et al., 2011; Srivastava et al., 2017). First, the cognitive component relates to individuals' beliefs, which can be altered by knowledge. Inclusive education focuses on advancing the education of minorities (such as students with disabilities) in regular classrooms (Ainscow and Sandill, 2010). Thus, students must be aware of their strengths and weaknesses and need to be able to advocate for their own learning. Second, the affective dimension refers to students' feelings with respect to students with disabilities being in their classrooms. Since typically developing students are expected to learn in the same classroom with such peers, it is useful to have a sense of what the former group thinks about the latter's participation in regular classrooms. Third, the behavioural facet involves how students act when students with disabilities are present in the classroom. The underlying idea behind inclusion not only encompasses the physical presence of students with disabilities in regular classes, but also encourages their effective involvement. Thus, attention is paid to how typically developing peers behave towards them. The combination of the abovementioned constructs provides a comprehensive picture of teachers' views on practising inclusive education.

It is vital to create a setting conducive to facilitating the participation of students with disabilities in regular classrooms (Ainscow and Sandill, 2010). One such way is encouraging their peers to accept them. Previous investigations have examined the perceptions of typically developing students towards learning in the same classroom with their counterparts with disabilities (Vignes et al., 2009; De Boer et al., 2013; Armstrong et al., 2016; De Boer and Pijl, 2016; Dias et al., 2020; Opoku et al., 2021). For example, in a Canadian study, McDougall et al. (2007) assessed the attitudes of peers towards students with disabilities in a high school. They reported that the students were generally positive towards such peers with disabilities. In Nigerian research, Olaleye et al. (2012) found that typically developing peers were positive towards their peers with disabilities. Conversely, a Dutch study showed that typically developing students were ambivalent towards learning alongside their peers with disabilities (De Boer and Pijl, 2016).

In conceptualizing theory of planned behaviour, Ajzen (1991) suggested the importance of background information in providing additional insight into views of a given behaviour. Previous studies have scrutinized the connection between the background information students are given and their perceptions of their peers with disabilities. In a Dutch quantitative study, De Boer et al. (2013) explored the opinions of typically developing students towards their peers with attention deficit hyperactivity disorder (ADHD) and autism spectrum disorder (ASD). They found differences regarding the degree of acceptance of students based on the disability; students were negative towards peers with ADHD compared to those with ASD. More so, girls were more positive towards students with disabilities than boys. Similar

gender differences were identified in recent Belgian studies (Petry, 2018), English (Armstrong et al., 2016), and Portuguese (Dias et al., 2020) studies. This probably gives credence to the need for targeted training for boys to enhance their understanding and acceptance of peers with disabilities. Other studies have also assessed whether being a friend or contact with a student with a disability could impact attitudes towards peers with disabilities. For example, in an English quantitative investigation, Laws and Kelly (2005) studied the attitude of typically developing students towards peers with Down Syndrome. Unfortunately, most participants indicated they were unprepared to interact or befriend a student with a disability. Notwithstanding, other studies have reported that one's contact with a student with a disability could impact or have a positive effect on their attitudes (Armstrong et al., 2016; Dias et al., 2020). Other variables, such as having a friend with a disability (Petry, 2018), being young and in lower educational levels (Armstrong et al., 2016), have been found to have a positive effect on attitudes towards learning in the same classroom with peers with disabilities.

While these investigations offer a useful framework in which to situate the present study, to the best of the authors' knowledge, none involved providing inclusive education to students before assessing their beliefs. Indeed, Fisher and Purcal (2017) and Gaad (2015) reported that a major route to changing perceptions is training individuals to improve their knowledge, awareness, and reception towards others with disabilities. While these findings seem to suggest that typically developing students may accommodate or accept learning with their peers with disabilities, the results might not apply to the UAE context due to cultural differences and historical background in terms of practising inclusive education. Also, studies on the attitude of students towards peers with disabilities are mainly limited to primary and secondary schools only. In light of this, it is necessary to expand the debate to studying the perception of typically developing university students towards learning in the same classroom with other students with disabilities. It is against this backdrop that we organised training for students before examining their views towards learning with peers with disabilities. Our study addresses gaps in previous research by answering the following questions:

1 Which demographic variables influence university students' attitudes towards their peers with disabilities?
2 Will students' perceived knowledge of inclusive education influence their attitudes towards learning in the same classroom as peers with disabilities?
3 What are the predictors of university students' attitudes towards learning in the same classroom with peers with disabilities?

METHODS

Study Participants

The participants were students enroled in public universities in the UAE. Consideration was given to students enroled in all programmes to afford a comparison between those who had taken a course in inclusive education and those who are yet to or may not take such a course. This is to help measure and compare whether the knowledge they have acquired in inclusive education or otherwise could influence their relationship with peers with disabilities.

Out of 400 questionnaires distributed, 233 were retrieved, representing a response rate of 58%. With respect to gender, 56% were males and 44% were females. For age, 53% were between 16 and 20 years old, while 47% said they were 21 years or older. With regards to knowledge about inclusive education, 71% said they had no knowledge, while 29% indicated they were aware of inclusive policies (see **Table 2** for details).

The Instrument

A two-part questionnaire was used for data collection. The first section gathered demographic data. The decision on demographic variables to collect from participants was based on a review of the literature (e.g. Laws and Kelly, 2005; De Boer et al., 2012). The data collected included gender, age, knowledge of inclusive education, learning with students with disabilities in the same classroom, contact with persons with disabilities, friends with students with disabilities, and having a relative with a disability.

We used a revised Chedoke-McMaster Attitudes towards Children with Handicaps (CATCH) scale (Rosenbaum et al., 1986) for data collection. We chose this instrument because it constitutes all the key components of attitudes (affective, behavioural, and cognitive). The CATCH scale is made up of three sub-scales, 36 items, and is widely used to collect data for studies that assess views towards children with disabilities (e.g. Vignes et al., 2009). In completing the questionnaire, participants had the option to either read the Arabic or English version. Although the scale had been translated in other languages such as Arabic (Alnahdi, 2020) and Turkish (Gumus et al., 2020) for data collection from school aged children (less than 18 years), we revised some the items to make them more suitable for university students. At this stage, the 36-item scale was given to three experts in special education and familiar with the study context to assess the suitability of the scale for data collection from university students. This process is referred to as the Delphi method, which is used to validate the content of a questionnaire by experts who are knowledgeable in the field (Mengual-Andrés et al., 2016). The experts suggested rewording all items positively and recommended deleting six items, leaving 30 items for data collection.

Procedure

The study and its protocols were approved by an institutional review board before data collection. After receiving approval, we sent letters about the study to the heads of departments and asked for their support regarding data collection. We circulated notices about the study on bulletin boards, and students were informed about the duration of the data collection. We decided to gather data during the Autism Day event, where a seminar was organised for the students. For this programme, lectures are delivered to students. During the programme, the first author interacted with students and introduced the concept of inclusive education to

TABLE 1 | Summary of factor analysis.

Items	Factor I	Factor II	Factor III
1. I wouldn't mind if a person with disability sits next to me	0.51	—	—
2. People with disability can do lots of things for themselves	0.33	—	—
3. I would introduce a person with disability to my friend	—	0.42	—
4. I would know what to say to a person with disability	—	0.35	—
5. I don't feel sorry for people with disability	0.35	—	—
6. People with disability want lots of attention from adults	0.11		—
7. I would invite a person with disability to my party	—	0.53	—
8. I wouldn't be afraid of a person with disability	—	0.61	—
9. I would talk to a person with disability I didn't know	—	0.34	—
10. People with disability do like to make friends	—	—	0.40
11. I would like if a person with disability to live next-door to me	—	—	0.52
12. People with disability feel sorry for themselves	0.44	—	—
13. I would be happy to have a person with disability for a special friend	—	0.46	—
14. I would try to stay away from a person with disability	—	0.53	—
15. People with disability are as happy as I am	—	—	0.35
16. I would like a person with disability as friend as much as my other friends	—	—	0.36
17. People with disability know how to behave properly	—	—	0.48
18. In class I would sit next to a person with disability	—	0.59	
19. I would be pleased if a person with disability invited to me to his house	—	—	0.54
20. I try to look at someone who is disabled	—	0.43	—
21. I would feel good doing a school project with a person with disability	—	0.33	—
22. People with disability do have much fun	—	—	0.67
23. I would invite a person with disability to my house	—	—	0.31
24. Being near someone who is disabled scares me	0.37	—	—
25. I would be embarrassed if a person with disability invited me to his party	—	—	0.33
26. People with disability are often sad	—	—	0.31
27. I would enjoy being with a person with disability	—	—	0.47
28. People with disability can make new friends	—	—	0.45
29. I feel upset when I see a person with disability	0.41	—	—
30. People with disability don't need lots of help to do things	—	—	0.58

Factor I = affective attitude; Factor II, behavioural attitude; and Factor III, cognitive attitude.

them. Afterwards, a trained research assistant distributed the printed questionnaire to the students. Participation was voluntary, as the students were not reimbursed. The data was collected in april 2019, and each student spent at least 20 min completing the questionnaires. They were asked to drop the completed questionnaires in a box located at the entrance/exit of the hall.

Data Analysis

We checked all the completed questionnaires for completeness before entering the data into the Statistical Package for Social Sciences (SPSS). Since we adapted the CATCH scale and translated it into Arabic, we decided to perform exploratory factor analysis (EFA) to check the structural validity (Pallant, 2016) of the scale in the UAE context.

The result of the Kaiser-Meyer-Olkin (KMO) test of the sample emerged as adequate (0.71), as well as the Bartlett's test of sphericity, which yielded a significant score ($p = 0.001$). The principal component analysis (PCA) revealed the presence of four components with eigenvalues that exceeded 1, namely 14, 19, 24 and 17%. The scree plot confirmed three clear breaks that verified the structure of the CATCH scale. While the scale used to collect the data had 30 items, in this study, we removed one item (item 6) because its value was less than 0.3.

With respect to the original CATCH scale, each of the items consisted of 12 items; however, in our study, we observed a different pattern. We used 29 items made up of three sub-scales (affective = 6 items; behavioural = 10 items and cognitive = 13 items). See **Table 1** for details.

At this stage, we calculated the internal reliability of the total scale and the subscales. For instance, the Cronbach's alpha of the total attitude score was 0.71, while the subscales yielded the following scores: affective (0.77), behavioural (0.70), and cognitive (0.72). The internal consistency reported here is comparable to what has been reported in the Arabic (Alnahdi, 2020) and Turkish (Gumus et al., 2020) languages.

We then proceeded to answer the research questions. To answer question 1, we conducted a *t*-test to compare the association between demographic variables and attitudes. We did this because all demographic variables had two levels. While assuming that the data were normally distributed because of the large sample size (Field, 2013), we checked to make sure that the assumption of the homogeneity of variance was not violated (Pallant, 2016). We did so by examining the results of Levene's test.

To answer question 2, we carried out a two-way (factorial) analysis of variance (ANOVA) to ascertain whether knowledge moderated the relationship between other demographics and attitudes. Here also, we aimed to ensure that the assumption of homogeneity of variance was not violated (Pallant, 2016).

To answer question 3, we used linear regression to determine the predictors of attitudes. Once again, we checked the

TABLE 2 | Influence of demographic profile on attitudes.

	Categories	Sample (N = 233)	Overall attitude	Affective	Behavioural	Cognitive
Gender (n = 208)	Male	116 (56%)	2.17 (0.28)	2.30 (0.36)	2.06 (0.36)	2.20 (0.30)
	Female t	92 (44%)	2.14 (0.30)	2.24 (0.39)	2.01 (0.39)	2.16 (0.32)
	partial eta squared	—	0.65	1.14	0.80	0.80
	—	—	0.001	0.003	0.003	0.004
Age (n = 202)	16–20 years	108 (53%)	2.21 (0.29)	2.30 (0.36)	2.09 (0.38)	2.25 (0.31)
	21 years and above t	94 (47%)	2.08 (0.26)	2.23 (0.40)	1.95 (0.32)	2.08 (0.28)
	partial eta squared	—	3.00**	1.26	2.78**	3.91**
	—	—	0.01	0.02	0.01	0.03
Knowledge of IE (*n* = 211)	Yes	61 (29%)	2.09 (0.28)	2.23 (0.38)	1.99 (0.35)	2.10 (0.32)
	No t	150 (71%)	2.17 (0.28)	2.30 (0.38)	2.04 (0.36)	2.20 (0.31)
	partial eta squared	—	−1.80*	−1.25	−0.84	−2.05*
	—	—	0.02	0.01	0.003	0.007
Learning with SWD (*n* = 218)	Yes	136 (62%)	2.16 (0.27)	2.30 (0.35)	2.05 (0.38)	2.19 (0.30)
	No t	82 (38%)	2.16 (0.28)	2.26 (0.40)	2.01 (0.32)	2.15 (0.33)
	partial eta squared	—	0.69	0.87	0.681	0.75
	—	—	0.005	0.003	0.005	0.001
Contact with PWD (*n* = 158)	Yes	107 (68%)	2.16 (0.32)	2.30 (0.38)	2.07 (0.41)	2.16 (0.34)
	No t	51 (32%)	2.19 (0.31)	2.30 (0.42)	2.06 (0.39)	2.24 (0.35)
	partial eta squared	—	−0.54	0.003	0.22	−1.38
	—	—	0.01	0.04	0.01	0.03
Friend with SWD (*n* = 221)	Yes	108 (49%)	2.19 (0.29)	2.35 (0.37)	2.07 (0.39)	2.20 (0.30)
	No t	113 (51%)	2.12 (0.25)	2.22 (0.36)	2.00 (0.32)	2.16 (0.30)
	partial eta squared	—	1.91*	2.66**	1.33	1.17
	—	—	0.03	0.04	0.02	0.03
Relative with disability (*n* = 193)	Yes	106 (55%)	2.17 (0.30)	2.33 (0.38)	2.04 (0.37)	2.19 (0.33)
	No t	87 (45%)	2.12 (0.28)	2.24 (0.39)	2.01 (0.38)	2.15 (0.30)
	partial eta squared	—	0.92	1.57	0.43	0.84
	—	—	0.04	0.01	0.003	0.002

*p < *05.**p < *01*

IE, inclusive education; SWD, student with disability; PWD, persons with disability.

TABLE 3 | Effect of knowledge on demographics and attitudes.

	Df	*MS*	*F*	*p*	*Partial eta*
Gender	1	38.78	0.53	0.47	0.08
Age	1	195.98	2.99	0.05*	0.002
Learning with SWD	1	149.72	2.16	0.14	0.02
Contact with PWD	1	131.63	1.57	0.21	0.05
Friend with SWD	1	25.86	0.40	0.53	0.004
Relative with disability	1	72.66	0.95	0.33	0.09

*p < *05.* **p < *01*

IE, inclusive education; SWD, student with disability; PWD, persons with disability.

assumptions of linearity and homoscedasticity and established that they were not violated (Field, 2013; Pallant, 2016).

RESULTS

Demographic Variables and Attitudes

Generally, students held negative attitudes towards learning in the same classroom as their peers with disabilities (M = 2.16; SD = 0.28). With respect to the sub-scales, the students who took part were low on all levels (affective: M = 2.28; SD = 0.37; behavioural: M = 2.04; SD = 0.37; cognitive: M = 2.18; SD = 0.31).

Table 2 summarizes the *t*-test computed for the associations between demographic variables and attitudes. With respect to overall perceptions, the only significant differences between participants were based on age (t 233) = 3.00, $p = 0.003$), knowledge (t 233) = −1.80, $p = 0.05$) about inclusive education, and having a friend with a disability (t(233) = 1.91, $p = 0.05$). In terms of age, younger students were more positive towards peers with disabilities than older students. We observed a similar trend for behavioural and cognitive views.

Also, students who said they were unaware of inclusive education were more positive than those who stated they were aware of it. We noted a similar phenomenon for the cognitive component. Furthermore, students who said they had friends with disabilities held a more positive outlook than those who did not have any friends with disabilities. We found a similar occurrence for affective attitudes. However, in this study, gender did not influence attitudes towards students with disabilities.

The Effects of Knowledge on Attitudes

Table 3 presents a two-way (between-groups) ANOVA computed to assess the interaction effect of knowledge on demographic variables and attitudes. Knowledge about inclusive education moderated the interaction between age and attitudes, F (1, 164) = 2.99, $p = 0.05$. Specifically, younger

TABLE 4 | Predictors of attitudes towards peers with disabilities.

Variable	B	S.E. B	B	t	*p*
Attitude					
Gender	−0.05	1.92	−0.003	−0.03	0.98
Age	−4.37	1.85	−0.24	−2.36	0.02*
Knowledge of IE	2.33	2.16	0.12	1.08	0.28
Learning with SWD	−0.26	1.93	−0.01	−0.13	0.89
Contact with PWD	3.08	1.99	0.16	1.55	0.13
Friend with disability	−2.63	1.87	−0.15	−1.41	0.16
Relative with disability	−1.66	1.88	−0.09	−0.88	0.38
Affective					
School type	0.25	0.50	0.06	0.51	0.61
Gender	−0.14	0.49	−0.03	−0.28	0.78
Age	−0.60	0.48	−0.13	−1.27	0.21
Knowledge of IE	0.26	0.54	0.05	0.48	0.63
Learning with SWD	0.001	0.50	0.001	0.002	1.00
Contact with PWD	0.58	0.52	0.12	1.12	0.27
Friend with disability	−0.98	0.48	−0.21	−2.04	0.05E
Relative with disability	−0.55	0.48	−0.12	−1.13	0.26
Behavioural					
Gender	−0.27	0.80	−0.03	−0.33	0.74
Age	−1.46	0.77	−0.19	−1.89	0.05*
Knowledge of IE	1.29	0.89	0.15	1.45	0.15
Learning with SWD	0.27	0.81	0.03	0.33	0.75
Contact with PWD	0.91	0.83	0.11	1.09	0.28
Friend with disability	−0.55	0.78	−0.07	−0.71	0.48
Relative with disability	−0.39	0.78	−0.05	−0.50	0.62
Cognitive					
Gender	0.01	0.88	0.001	0.007	0.99
Age	-2.81	0.85	−0.33	−3.31	0.001**
Knowledge of IE	0.57	0.98	0.06	0.58	0.57
Learning with SWD	−1.03	0.88	−0.12	−1.17	0.24
Contact with PWD	1.51	0.91	0.17	1.66	0.10
Friend with disability	−1.25	0.85	−15	−1.46	0.15
Relative with disability	−1.14	0.86	−0.13	−1.34	0.19

*p < *05*. **p < *01*

IE, inclusive education; SWD, student with disability; PWD, persons with disability.

students were more positive towards peers with disabilities than older students. Conversely, knowledge about inclusive education did not interact significantly regarding the relationship between other demographics (e.g., gender and learning with a student with a disability in class) and attitudes.

Predictors of Attitudes

We gauged the relationship between affective, behavioural, and cognitive attitudes using the Pearson product-moment correlation coefficient. There was a moderate correlation between the three sub-scales (affective and behavioural, r = 0.52, p = 0.001; affective and cognitive, r = 0.47, p = 0.001; behavioural and cognitive, r = 0.57, p = 0.001).

Table 4 summarizes the predictors of attitudes. We carried out a 4-model linear regression to ascertain the predictors of attitudes. For general views, the demographic variables made an insignificant (F (8, 93) = 1.64, p = 0.13) contribution of 13% to variance in opinions. Notwithstanding, only age emerged as the best predictor and made a significant contribution to variance in perceptions (beta = −0.24, p = 0.02).

Regarding affective attitudes, the demographic variables made an insignificant contribution (F (8, 97) = 1.01, p = 0.43) of 8% to the variance. Having a friend with a disability emerged as the best predictor and made a significant contribution (beta = −0.21, p = 0.05) in terms of affective variance.

Moreover, for both behavioural (F (8, 97) = 1.38, p = 0.22) and cognitive attitudes (F (8, 95) = 2.46, p = 0.02), the demographic variables made contributions of 11 and 19%, respectively. In both models, students' age was the best predictor and made a significant contribution to the variances of the sub-scales.

DISCUSSION

In this study, we explored the perspectives of university students towards learning with their peers with disabilities. Access to universities has been identified as a key factor in eliminating extreme poverty by 2030 (United Nations, 2015). While having qualified teachers in the classroom is a good first step, mutual understanding between all university students is required. Unfortunately, our findings showed that typically developing students held negative attitudes towards their peers with disabilities. This outcome is inconsistent with previous research, which reported positive perceptions (Olaleye et al., 2012) or ambivalence (Opoku et al., 2021) of typically developing students towards their peers with disabilities. It is critical to note that there is general negativity towards individuals with disabilities in the UAE (Anati, 2013; Gaad, 2011; Knowledge and Human Development Authority, 2019a). This could imply that typically developing students might not entertain or support students with disabilities in their classrooms. Due to the intensity of university education and the likely limited skills of teachers to instruct students with disabilities (Gaad and Almotairi, 2013), they may require assistance from their peers to navigate their programmes. However, according to our study, typically developing students might not entertain or socialize with students with disabilities. This could affect the government's goal of promoting the implementation of inclusive education for students in all grade levels (Knowledge and Human Development Authority, 2017). In particular, students with disabilities may feel unwanted, rejected, or even side-lined by their typically developing peers. Hence, there is an urgent need for the government to prioritize public education aimed at educating typically developing students about the capabilities and acceptance as well as the help they could provide to their peers with disabilities.

Another interesting finding in this study was that students who were unaware or had limited knowledge of inclusive practices were more positive towards peers with disabilities than those who said they were aware of it. This result is not in line with previous investigations, which revealed that awareness of inclusive policies improves or leads to positive feelings towards individuals with disabilities, versus those who stated otherwise (e.g. De Boer et al., 2011). This finding is surprising because being aware of inclusive education policies is believed to be important in promoting the acceptance of, and support for, inclusive education (Forlin et al., 2014). In the UAE

context, this could be linked to the long-standing negativity towards persons with disabilities (Anati, 2013; Gaad, 2011). It is possible that those who claimed to be aware of the policy were unsure whether it was achievable. Keep in mind that this is occurring against the backdrop of the ongoing education of students with disabilities in special schools (Gaad, 2011). Given the intensity of university education, perhaps typically developing peers who are knowledgeable about implementation of inclusive education may doubt the ability to realise inclusive education. Plausibly, to achieve inclusivity at all levels of education, policymakers could consider celebrating the potential of individuals with disabilities while educating society and students about the content of inclusive education policy.

Although age emerged as a significant predictor of attitudes, there was a considerable difference between students based on age. Specifically, younger students were more positive towards peers with disabilities than older students. This result is inconsistent with previous research, which discovered no discrepancy between older and younger students (Laws and Kelly, 2005; Opoku et al., 2021). The outcome reported in the present study could mean that students who are younger might have time, or be more willing to spend time, with their peers with disabilities. This is unexpected because in the UAE, anecdotal evidence shows that older students are parents with familial responsibilities. This places them in a better position to understand the vulnerability of their peers with disabilities and to embrace them. While raising their children, they have come to master the art of understanding children who cannot support themselves, which could be a critical attribute that could be transferred to inclusive schools. Potentially, such individuals would be able to involve peers with disabilities and aid them in reaching their innate potential. Alternatively, there is a possibility that older students may not have time to spend or support students with disabilities because of their familial responsibilities. Nevertheless, our findings show the need for the UAE to develop targeted education about acceptance among older students who are learning in the same classroom with students with disabilities.

In this study, participants who maintained they had friends with disabilities were more positive regarding affective variables than others. This outcome aligns with previous studies, which demonstrated that students who had friends with disabilities held positive attitudes towards their peers with disabilities (De Boer et al., 2012; Petry, 2018). This is expected because knowing individuals with disabilities is reported to improve understanding of their needs, capabilities, and strengths. Furthermore, being close to or having a friend with a disability can enable participants to share their difficulties and remain committed to enhancing the well-being of their peers with disabilities. It is possible for such participants to build close bonds with students with disabilities, support their learning and develop good relationships with them. This could be an approach for policymakers in the UAE to implement inclusive education in universities. In particular, policymakers could create training programmes aimed at orienting typically developing students towards their peers with disabilities and encouraging them to befriend, help, and socialise with them. The importance of such an initiative could be discussed with typically developing students, whose views could be elicited about the best ways to promote the participation of their peers with disabilities.

Awareness of inclusive education policy and practises moderated the relationship between age and attitudes towards peers with disabilities. Specifically, younger students who said they were aware of inclusive policies held positive views of their peers with disabilities. This finding is partly consistent with studies that found education to be important in changing attitudes towards individuals with disabilities (Fisher and Purcal, 2017). With negative perceptions and the UAE's struggle to carry out inclusive education (Gaad, 2011), public education about policy among students seems necessary in this context. Students may be open to, or receptive to, learning with students with disabilities once they are made aware of inclusive policies and practises. This study finding probably provides an impetus for educators in the UAE to expedite the education of typically developing students regarding inclusive education, structures and support systems.

Limitations

Our results should be interpreted with caution because of several limitations. First, the study was limited to typically developing students at public universities only. The findings might not be representative of all students studying in the Emirates. However, since there was diversity among the students who took part in this study, the students in our study may reflect the diversity of the federation. Second, our study was limited to typically developing students and did not include those with disabilities. Understanding how students with disabilities believe their typically developing peers perceive them could provide useful information for policymakers in the UAE. Thus, future research studies could examine the perceptions of this group. Third, the CATCH scale was initially developed for young children (Rosenbaum et al., 1986) however, in this study, it was used for university students. It is useful to state here that the scale was revised to make it suitable for the participants who took part in this study. Moreover, it was beyond the scope of this study to compare students' opinions about different types of disabilities. Future research should explore common types of disabilities in schools and contrast attitudes towards them. Despite these limitations, we used an appropriate tool to assess the views of typically developing students towards their peers with disabilities.

CONCLUSION AND STUDY IMPLICATIONS

Education is seen as a basic right in which all people are supposed to participate and unearth their innate potential (Ainscow and Sandill, 2010). In this study, we assessed the views of typically developing university students towards their peers with disabilities in the UAE. Our study is relevant at a time when the federation government of UAE is working towards practising inclusive education at all levels of education (Knowledge and Human Development Authority, 2017). The creation of a conducive learning environment is central to achieving the goal of having all students study in one classroom. This

suggests the need to promote cordial relationships between students with disabilities and their typically developing counterparts. However, our findings revealed negative attitudes among typically developing students towards their peers with disabilities. Furthermore, there were significant differences across participants based on age, awareness of inclusive policies, and contact with persons with disabilities. Interestingly, students who said they were unaware of inclusive education policies were more open towards their peers with disabilities than those who stated otherwise. Also, young students who were aware of inclusive policies held more positive attitudes than others.

The results imply that students with disabilities may struggle to participate in universities if urgent measures are not put in place to promote their acceptance and change perceptions. To expedite implementation of inclusive education at the university level, policymakers could consider educating all students about inclusive education, benefits and potential for students with disabilities to become productive members of society. This would enable them to become aware of inclusive policies, understand structures and support services and contribute to enhancing the learning of all students. Additionally, more tailored education programmes are vital in the UAE. Policymakers could consider developing regular training programmes or workshops that take into consideration age and target audience. Moreover, the leadership of the UAE may consider celebrating disabilities, highlighting the accomplishments of students and prominent people with disabilities in the Emirates. This would enable students to better understand the capabilities of their peers with disabilities and help them to integrate into mainstream classrooms. More so, educators may guide typically developing peers regarding the presence of students with disabilities in schools and ways they could boost their involvement in lessons. They could focus on activities for all students and create avenues for students with diverse abilities to meet or interact together. This would help bring students with disabilities and typically peers together to understand, accept, and possibly complement the effort of one another. It is hoped that institutionalising these or some of these methods would put the UAE at the forefront of achieving inclusivity at universities and larger society.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by ethics and review committee at United Arab Emirates University. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

MA, MO and AM contributed to the conception of the study. MA and MO collected the data. MA, MO and AM analyzed and interpreted the data. MA, MO and AM were major contributors in writing the manuscript. All authors read and approved the final.

REFERENCES

Ainscow, M., and Sandill, A. (2010). Developing Inclusive Education Systems: the Role of Organisational Cultures and Leadership. *Int. J. Inclusive Education.* 14 (4), 401–416. doi:10.1080/13603110802504903

Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational Behav. Hum. Decis. Process.* 50 (2), 179–211. doi:10.1016/0749-5978(91)90020-T

Ajzen, I. (2011). The Theory of Planned Behaviour: Reactions and Reflections. *Psychol. Health.* 26 (9), 1113–1127. doi:10.1080/08870446.2011.613995

Alborno, N. E., and Gaad, E. (2014). 'Index for Inclusion': a Framework for School Review in the United Arab Emirates. *Br. J. Spec. Education.* 41 (3), 231–248. doi:10.1111/1467-8578.12073

Alborno, N. E. (2017). The 'yes ... but' Dilemma: Implementing Inclusive Education in Emirati Primary Schools But'dilemma: Implementing Inclusive Education in Emirati Primary Schools. *Br. J. Spec. Education.* 44 (1), 26–45. doi:10.1111/1467-8578.12157

Alghazo, E. M., and Naggar Gaad, E. E. (2004). General Education Teachers in the United Arab Emirates and Their Acceptance of the Inclusion of Students With Disabilities. *Br. J. Spec. Education.* 31 (2), 94–99. doi:10.1111/j.0952-3383.2004.00335.x

Alkhateeb, J. M., Hadidi, M. S., and Alkhateeb, A. J. (2016). Inclusion of Children with Developmental Disabilities in Arab Countries: A Review of the Research Literature From 1990 to 2014. *Res. Dev. Disabil.* 49-50, 60–75. doi:10.1016/j.ridd.2015.11.005

Alnahdi, G. H. (2020). The Construct Validity of the Arabic Version of the Chedoke-McMaster Attitudes Towards Children With Handicaps Scale. *Cogent Education.* 7 (1), 1745540. doi:10.1080/2331186X.2020.1745540

Anati, N. M., and Ain, A. (2012). Including Students With Disabilities in UAE Schools: A Descriptive Study. *Int. J. Spec. Education.* 27 (2), 75–85.

Anati, N. (2013). The Pros and Cons of Inclusive Education from the Perceptions of Teachers in the United Arab Emirates. *Int. J. Res. Stud. Education.* 2 (1), 55–66.

Arif, M., and Gaad, E. (2008). Special Needs Education in the United Arab Emirates (UAE): a Systems Perspective. *J. Res. Spec Educ Needs.* 8 (2), 111–117. doi:10.1111/j.1471-3802.2008.00108.x

Armstrong, M., Morris, C., Abraham, C., Ukoumunne, O. C., and Tarrant, M. (2016). Children's Contact With People With Disabilities and Their Attitudes Towards Disability: a Cross-Sectional Study. *Disabil. Rehabil.* 38 (9), 879–888. doi:10.3109/09638288.2015.1074727

Ashman, A. (2015). *Education for Inclusion and Diversity*. 5th edition. Melbourne, VIC: Pearson Australia.

Calderon, A. (2013). *Effect of Cultural Perspectives on the Process of an Inclusive Education in Primary Schools in Dubai, United Arab Emirates (PhD Thesis)*. Dubai: The British University in Dubai.

De Boer, A., Pijl, S. J., and Minnaert, A. (2011). Regular Primary Schoolteachers' Attitudes Towards Inclusive Education: a Review of the Literature. *Int. J. Inclusive Educ.* 15 (3), 331–353. doi:10.1080/13603110903030089

De Boer, A., Pijl, S. J., and Minnaert, A. (2012). Students' Attitudes Towards Peers with Disabilities: A Review of the Literature. *Int. J. Disabil. Development Education.* 59 (4), 379–392. doi:10.1080/1034912X.2012.723944

De Boer, A., Pijl, S. J., Post, W., and Minnaert, A. (2012). Peer Acceptance and Friendships of Students With Disabilities in General Education: The Role of Child, Peer, and Classroom Variables. *Soc. Development.* 22 (4), a–n. doi:10.1111/j.1467-9507.2012.00670.x

De Boer, A., and Pijl, S. J. (2016). The Acceptance and Rejection of Peers With ADHD and ASD in General Secondary Education. *J. Educ. Res.* 109 (3), 325–332. doi:10.1080/00220671.2014.958812

Dias, P. C., Mamas, C., and Gomes, R. (2020). Attitudes of Students Towards Peers With Special Educational Needs in Mainstream Portuguese Schools. *Eur. J. Spec. needs Educ.* 35 (5), 636–647. doi:10.1080/08856257.2020.1743410

Dukmak, S. (2009). Rehabilitation Services in the United Arab Emirates as Perceived by Parents of Children With Disabilities. *J. Rehabil.* 75 (4), 27–34.

Field, A. (2013). *Discovering Statistics Using IBM SPSS Statistics*. 4th Edition. London: Sage.

Fishbein, M., and Ajzen, I. (1975). *Belief, Attitude, Intention, and Behavior*. New York: Wiley.

Fisher, K. R., and Purcal, C. (2017). Policies to Change Attitudes to People with Disabilities. *Scand. J. Disabil. Res.* 19 (2), 161–174. doi:10.1080/15017419.2016.1222303

Forlin, C., Sharma, U., and Loreman, T. (2014). Predictors of Improved Teaching Efficacy Following Basic Training for Inclusion in Hong Kong. *Int. J. Inclusive Education.* 18 (7), 718–730. doi:10.1080/13603116.2013.819941

Gaad, E., and Almotairi, M. (2013). Inclusion of Student With Special Needs Within Higher Education in UAE: Issues and Challenges. *Jier.* 9 (4), 287–292. doi:10.19030/jier.v9i4.8080

Gaad, E. (2011). *Inclusive Education in the Middle East*. London: Routledge.

Gaad, E. (2015). Look Who's Coming to School: the Emirati Student Voice in an Intervention-Based Study on Inclusion of Learners With Intellectual Disabilities in Emirati Mainstream Government Schools. *J. Res. Spec. Educ. Needs.* 15 (2), 130–138. doi:10.1111/1471-3802.12053

Gaad, E. (2019). "Educating Learners With Special Needs and Disabilities in the UAE: Reform and Innovation," in *Education in the United Arab Emirates*. Editor K. Gallagher (Springer), 147–159. doi:10.1007/978-981-13-7736-510.1007/978-981-13-7736-5_9

Gallagher, K. (2019). Introduction: Education in the UAE-Context and Themes. In K. Gallagher (ed), *Education in the United Arab Emirates* (pages 1–18). Springer. doi:10.1007/978-981-13-7736-5

Gumus, E. C., Öncel, S., and Oncel, S. (2020). Validity and Reliability of the Chedoke-McMaster Attitudes Towards Children with Handicaps Scale in Turkey: A Methodological Study. *Fnjn.* 28 (1), 1–12. doi:10.5152/FNJN.2020.426719

Knowledge and Human Development Authority (2017). *Dubai Inclusive Education Policy Framework*. Dubai: Knowledge and Human Development Authority.

Knowledge and Human Development Authority (2019a). *Implementing Inclusive Education: A Guide for Schools*. Dubai: Knowledge and Human Development Authority.

Knowledge and Human Development Authority (2019b). *Directives and Guidelines for Inclusive Education: Ensuring Equitable Access to Education for Students of Determination*. Dubai: Knowledge and Human Development Authority.

Laws, G., and Kelly, E. (2005). The Attitudes and Friendship Intentions of Children in United Kingdom Mainstream Schools Towards Peers With Physical or Intellectual Disabilities. *Int. J. Disabil. Development Education.* 52 (2), 79–99. doi:10.1080/10349120500086298

Mengual-Andrés, S., Roig-Vila, R., and Mira, J. B. (2016). Delphi Study for the Design and Validation of a Questionnaire about Digital Competences in Higher Education. *Int. J. Educ. Technol. High Educ.* 13 (1), 1–11. doi:10.1186/s41239-016-0009-y

Morgan, C. (2021). The Experiences of Disabled People in the United Arab Emirates: Barriers to Participation in Higher Education and Employment. *Disabil. Soc.*, 1–24. (online ahead of print). doi:10.1080/09687599.2021.1930520

Opoku, M. P., Nketsia, W., J-F, W. K., Agyei-Okyere, E., and Safi, M. (2021). The Interaction Between Typically Developing Students and Peers With Autism Spectrum Disorder in Regular Schools in Ghana: An Exploration Using the Theory of Planned Behaviour. *Front. Psychol.* 12, 1–11. doi:10.3389/fpsyg.2021.752569

Pallant, J. (2016). *SPSS Survival Manual: A Step by Step Guide to Data Analysis Using IBM SPSS*. 6th ed. Sydney, NSW: Allen and Unwin.

Petry, K. (2018). The Relationship Between Class Attitudes towards Peers With a Disability and Peer Acceptance, Friendships and Peer Interactions of Students with a Disability in Regular Secondary Schools. *Eur. J. Spec. Needs Education.* 33 (2), 254–268. doi:10.1080/08856257.2018.1424782

Rosenbaum, P. L., Armstrong, R. W., and King, S. M. (1986). Children's Attitudes toward Disabled Peers: A Self-Report Measure. *J. Pediatr. Psychol.* 11 (4), 517–530. doi:10.1093/jpepsy/11.4.517

Saqr, S., and Tennant, L. J. (2016). Emirati General Education Pre-Service Teachers' Preparedness for Diversity in Inclusive Classrooms. *Ije.* 8 (2), 105–121. doi:10.5296/ije.v8i2.9396

Sharma, U., Forlin, C., Marella, M., and Jitoko, F. (2017). Using Indicators as a Catalyst for Inclusive Education in the Pacific Islands. *Int. J. Inclusive Education.* 21 (7), 730–746. doi:10.1080/13603116.2016.1251979

Srivastava, M., De Boer, A. A., and Pijl, S. J. (2017). Preparing for the Inclusive Classroom: Changing Teachers' Attitudes and Knowledge. *Teach. Development.* 21 (4), 561–579. doi:10.1080/13664530.2017.1279681

UNESCO (1994). *The Salamanca Statement and Framework for Action on Special Needs Education*. Paris: Author.

United Nations (2007). *Convention on the Rights of Persons with Disabilities*. New York: Author.

United Nations (UN) (2015). *Transforming Our World: The 2030 Agenda for Sustainable*. New York: developmentAuthor.

Vignes, C., Godeau, E., Sentenac, M., Coley, N., Navarro, F., Grandjean, H., et al. (2009). Determinants of Students' Attitudes Towards Peers With Disabilities. *Dev. Med. Child. Neurol.* 51 (6), 473–479. doi:10.1111/j.1469-8749.2009.03283.x

World Health Organisation (2011). *World Disability Report*. Geneva: Author.

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