

Enhancing Graduate Students' Attitudes and Self-Efficacy towards Inclusively Teaching Children with Disabilities Using an Inclusivity-Based Physical Activity Program

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Abstract Although the inclusion of disabled children in physical education (PE) classes remains challenging, the attitudes and self-efficacy (SE) of physical educators are considered critical factors impacting the implementation of such inclusion successfully. This study aims to examine the impact of an inclusive physical activity (IPA) intervention program on the attitudes and SE of Saudi graduate PE students as future physical educators towards including children with hearing impairments in PE classes. A sample of 40 female graduate students (experimental group: $n = 20$; control group: $n = 20$) aged 24–42 years from a university in Eastern Saudi Arabia participated in the study. Attitudes and SE were measured pre- and post-IPA intervention program using the Arabic version of the Attitudes Toward Inclusion in Physical Education and Self-Efficacy Scale for Physical Education Teacher Education Majors toward the Inclusion of Children with Disabilities. The findings of a repeated measure ANOVA indicated that the IPA intervention program had significant improvements on participants' SE towards including children with hearing impairments in PE classes compared to the control group; participants' attitudes towards children with hearing impairments in PE classes were also improved, but not significantly. This study's findings support the continued implementation of such intervention programs with different populations and different disabilities.

Keywords Physical Education, Inclusive Physical Education, Inclusion, Hearing Impairments, Saudi Arabia

1. Introduction

There is an increasing global focus on the role of inclusion in enhancing the rights of disabled children in education within inclusive school settings. Educational inclusion denotes that the school's processes are adapted to suit the requirements of disabled children to ensure that the needs of all children are catered to and that educational outcomes are optimized for all [1]. Inclusive educational pedagogy asserts that the main way that disabled children can be included is providing them with specific adaptation and support in the context of inclusive local-community educational contexts; this facilitates the comprehensive development and enhancement of the opportunities available to disabled children to enable them to accomplish the same educational outcomes as their non-disabled peers [2]. Provisioned by the United Nations, Sustainable Development Goal 4 (SDG 4) seeks to ensure that all children regardless of disability are provided with an outstanding education that is both equitable and inclusive [3]. Further, the International Convention on Rights for Persons with Disabilities (Article 30) declares that disabled children taught in inclusive physical education (PE)

contexts are to be provided with equal access to sports, recreation, play, and leisure activities that are comparable to their non-disabled peers [4]. Article 30 has, over the last few decades, encouraged many countries worldwide to support inclusive education practices for those with disabilities via the provision of government legislation and procedures to ensure that all disabled children can access inclusive education at all stages of their education in their respective countries [5,6]. Despite the above, the successful incorporation of inclusive educational practices designed to improve educational outcomes for disabled children and enhance teachers' outlook and competence in managing inclusive classes is still challenging [7].

Despite the increasing numbers of disabled children enrolling in inclusive schools, physical educators often report feeling that they have insufficient support, understanding, training, experience, and preparedness to provide adequate PE instruction for disabled children in inclusive settings [1,8,9]. Successfully implementing an inclusive PE teaching program depends on the teachers' capability and preparedness to cater to disabled children [10]. However, the reported lack of preparedness among physical educators in inclusive settings towards teaching disabled children harms such teachers' self-efficacy (SE), ability, attitudes, and self-belief when tasked with teaching disabled children, which can cause unwanted outcomes for teachers as well as children, thus worsening the alienation and exclusion of disabled children in supposedly inclusive PE classes [11]. Li et al. [12] and You et al. [13] asserted that the attitudes and SE of physical educators toward teaching disabled children have been identified as the most crucial determinants of ensuring successful inclusion in general PE contexts [7].

In fact, attitudes among teachers have been strongly linked to their SE, as suggested by social learning theory [14]. Further, SE is reported to be a vital moderator of an individual's intention and attitude towards performing a particular behavior and is a crucial determiner of achievement-related behaviors [15]. These relationships account for the link between teachers' sense of attitudes and SE toward inclusive education; in other words, having a stronger sense of perceived ability leads to more beneficial attitudes toward teaching disabled children. For example, an individual with a strong sense of SE will be more likely to take on a challenge successfully (in this context, by making adjustments to their teaching practices to achieve successful inclusion for children with a disability) in comparison to an individual with a weaker sense of SE [16]. Teachers with high levels of SE are more likely to maintain that they have adequate abilities, understanding, and materials available to them to successfully educate disabled children. Such teachers, therefore, are more likely to report having positive attitudes towards inclusive educational practices and understand the benefits of successfully achieving inclusion for disabled children in PE classes. This highlights the need to enhance positive attitudes towards inclusion among physical

educators as well as increase their sense of SE about educating disabled children to achieve equal, equitable, and inclusive PE and successfully implement these practices [17-19].

Recent research has indicated that providing high-quality inclusivity training for pre-service physical educators is vital in ensuring they are adequately prepared and supported to teach disabled children confidently in inclusive PE settings [5,20]. In addition, educational interventions to enhance pre-service physical educators' attitudes, SE, and skills toward teaching disabled children in inclusive settings are crucial for addressing the shortcomings in currently available pre-service physical educators' programs designed for those wishing to teach disabled children in inclusive PE settings [7,21,22]. For instance, as the physical educators of the future, PE graduates attending PE master's courses in Saudi Arabia study an entirely theoretical three-credit course in teaching PE to disabled students. This lack of practical experience may negatively affect their attitudes, SE, and preparedness for teaching disabled students in their PE classes in the future. Therefore, providing additional practical prospects for physical educators to gain experience in instructing disabled children plays a crucial and valuable role in establishing more effective inclusive PE teaching in Saudi Arabia.

To address the above-mentioned shortcoming of current educational programs for physical educators wishing to teach disabled children in inclusive PE settings, one approach to improve physical educators' attitudes and level of SE toward teaching disabled children is offering short-term intervention programs designed to fulfill these objectives. To illustrate it, Foley et al.'s [20] study examined the effectiveness of providing an intensive 1-week sports camp for visually impaired children as part of an undergraduate course for pre-service physical educators designed to enhance the teachers' SE towards educating children with intellectual, physical, and visual disabilities in PE classes. The study found that the pre-service physical educators' levels of SE towards instructing children with the above disabilities increased significantly following their participation in the program. Relatedly, a study by Neville et al. [19] investigated the outcomes of a 1-day physical educators workshop designed to enhance inclusivity by raising pre-service physical educators' SE towards providing inclusive instruction for disabled children. The results indicated that the 1-day program significantly enhanced participants' levels of SE while the teachers who took part reported that the program had significantly raised their level of SE about instructing disabled children. Regarding physical educators' attitudes toward teaching children with a disability, Tindall et al.'s [23] study investigated the effects of a 10-hour inclusive PE program on Irish pre-service physical educators' attitudes toward teaching children with physical, intellectual, and learning disabilities. The results suggested that the program positively affected participants' attitudes

toward teaching disabled children.

Even though in-service and pre-service physical educators' attitudes and SE toward teaching disabled children have been the subject of many studies over the past two decades [24], there is a demonstrable gap in the literature in investigating how effective intervention programs designed to enhance the attitudes and SE of pre-service and in-service physical educators toward providing inclusive education for disabled children in general PE contexts in Middle Eastern and non-Western settings. Further, there is scant research on the use of inclusive PE programs in relation to the effectiveness of such programs in enhancing the attitudes and levels of SE among graduate students as future physical educators toward providing inclusive PE classes for children with hearing impairments as well as approaches to adequately prepare physical educators to succeed in this respect especially in Saudi Arabia. In Saudi Arabia, PE lessons for female students have only recently been introduced in public schools. Therefore, ensuring that an appropriate environment is available for providing PE classes for students with hearing impairments alongside their peers is a critical component of successful inclusive practices. Given the above, the current study aimed to examine the outcomes of an inclusive physical activity (IPA) intervention program designed to enhance Saudi Arabian graduate-level PE students' attitudes and SE toward providing inclusive PE classes for hearing-impaired children in inclusive PE classes. The current study hypothesized that the IPA intervention program would enhance attitudes and SE in comparison to a control group.

2. Methods

2.1. Participants

A total of 40 female master's students (experimental group: $n = 20$; control group: $n = 20$) aged between 24 and 42 years old enrolled on a university Physical Education master's program at a university in Eastern Saudi Arabia participated in the study. A female-only group of participants were recruited as the intervention program which was applied in all-female school. Saudi Arabian schools are completely gender-segregated: female teachers teach female students and male teachers teach male students. Also, Saudi Arabia only started providing PE lessons for female students attending public schools in 2018, which means that this group of learners has only limited experience in studying PE.

2.2. Instruments

2.2.1. Attitudes Scale

The Attitudes Toward Inclusion in Physical Education (ATIPE) questionnaire [24] was used to measure the participants' attitudes toward including children with

hearing impairments in PE classes. The original English version of the instrument was translated into Arabic by three professionals using the back-translation approach [25].

The ATIPE consists of 15 items: 11 negatively worded statements and 4 positively worded statements. An example of the former is: "Since excellence is a major requirement, it is important to avoid any disturbance to the PE class, such as inclusion of children with disability"; an example of the latter is "Including a child with disability could enhance democratic and pluralistic values". Participants responded to each item using a scale of 1 to 4, with 1 being "strongly disagree" and 4 being "strongly agree". Higher scores indicated a more favorable attitude toward the inclusion of disabled children in PE settings. The ATIPE score is given as the mean of all item responses. The Arabic version of the ATIPE has good internal consistency (Cronbach's $\alpha = 0.93$). The Kaiser-Meyer-Olkin (KMO) index is a statistical measure that is used to assess the suitability of data for factor analysis; scores of > 0.8 are considered adequate; the KMO score for the current data was 0.937. Bartlett's test of sphericity for the ATIPE data was also statistically significant [25].

2.2.2. Self-Efficacy Scale

To evaluate the degree of SE of participants in including children with hearing impairments in PE classes, the researcher employed the Self-Efficacy Scale for Physical Education Teacher Education Majors toward Children with Disabilities (SE-PETE-D) [16]. The original English version of the scale was translated into Arabic by three professional translators using the back-translation approach [25]. This questionnaire consists of 33 questions and is designed to explore participants' views about their sense of SE in facilitating the inclusion of (i) children with intellectual disabilities (11 items), (ii) children with physical disabilities (12 items), and (iii) children with visual impairments (10 items). Participants rated their confidence in their answers on a scale of 1 to 5, with 1 being "no confidence" and 5 being "complete confidence". Higher scores indicated a higher degree of perceived SE toward including disabled children in PE classes. The participants were required to read a brief description of a student with one of the above-mentioned disabilities that was provided at the beginning of each section. Next, participants were instructed to evaluate their confidence levels with respect to various teaching tasks that they might perform for a student. These tasks included providing a safe environment, adapting equipment to meet the student's needs, instructing peers, and modifying class instructions as necessary. Only one section (i.e., SE towards including children with visual impairments) was used in the current study. Three minor modifications were made to this section: (i) changing the section name from *Visual Impairments* to *Hearing Impairments*, (ii) altering the name of the student featured in the original description (Sofia) to a more

popular Saudi name (Nora), and (iii) providing the following description of a student with hearing impairments:

Nora is a primary school student. She has a severe hearing impairment, which requires others to be in close proximity for her to hear them clearly. Nora sometimes suffers from disequilibrium, which affects her physical and motor performance. She is very active, and her fitness level is comparable to her peers. Nora needs assistance to understand everything going on around her at school. For example, her hearing is not good enough to hear her teacher's explanations and she needs theoretical and practical instructions as well as someone to guide or direct her while playing. When Nora plays team games such as basketball or football, she suffers from a lack of focus when she receives the ball. In her PE classes, Nora tries to participate in activities and sports, although she understands that it may be difficult for her to keep up with her peers in terms of understanding or succeeding.

The internal consistency of the SE-PETE-D in Arabic was found to be reliable in evaluating the SE of participants towards accommodating visually impaired children in PE classes, as indicated by a high value of Cronbach's alpha (0.98). In terms of suitability for factor analysis, the KMO index for the SE-PETE-D data for measuring participants' SE toward including children with visual impairments was 0.987 (scores of > 0.8 are considered adequate). Finally, Bartlett's test of sphericity for the SE-PETE-D was statistically significant [25].

2.3. Intervention

The IPA intervention program investigated in the current study was designed to enhance participants' attitudes and level of SE in relation to teaching children with hearing impairments in general PE classes. Recently described by Alhumaid et al. [26], the Inluye-T guide [27] was used as the intervention program's primary reference to increase the efficacy and value of the existing IPA intervention program. The Inluye-T guide was created with the explicit objective of fostering the inclusion of children with diverse disabilities (including intellectual, physical, visual, and hearing impairments) in PE. Reina et al. [28] translated the original version of the Inluye-T guide from Spanish to English. The IPA program provided educational information about including children with hearing impairments in PE classes based on the Inluye-T guide; for example, designing individualized lesson plans, providing a safe learning environment, developing appropriate activities and games, and modifying equipment, activities, and games.

The IPA intervention program consisted of three sessions (theoretical and practical) across three days for a total of nine hours. The theoretical session (day 1) was held on campus; the practical sessions (days 2 and 3) were conducted in a gymnasium at a primary all-female school. In the first session (day 1), the participants attended a

lecture entitled "Toward Successful Inclusive Physical Education" given by the author, who is a specialist in adapted physical activity. The lecture provided strategies and ideas for including children with hearing impairments in PE settings. Also, as suggested by the Inluye-T guide, the lecture sought to raise awareness of the needs of disabled children to promote a more understanding and empathetic approach among physical educators. To raise the participants' familiarity with working with hearing impaired children, the author also provided useful information about teaching such children. Participants were able to ask questions if they had any. In the second and third sessions (days 2 and 3), the participants gained practical experience in teaching PE classes for grade 4, 5, and 6 primary school children ($N = 43$) with hearing impairments ($n = 22$) and their hearing peers ($n = 21$) in a controlled and structured environment for approximately three hours each day. The participants practiced creating a safe learning environment, modifying equipment, developing and preparing inclusive physical activities and games, and teaching. After the completion of sessions two and three, the participants were asked to discuss how they felt about practicing the above tasks and provide feedback on any particular challenges they encountered related to (i) making modifications to equipment, and (ii) if any how the IPA intervention had affected their confidence in providing inclusive PE classes for children with hearing impairments.

2.3.1. Validity of the IPA Intervention Program

A team of three adapted physical activity/education specialists were recruited to assess the content validity of the IPA intervention program; they were asked to comment on and make recommendations about its content and length. This feedback resulted in minor modifications being made although none significantly altered the intervention program's overall aims.

2.4. Procedure

First, ethical approval was sought and granted by King Faisal University Research Ethics Committee (KFU-REC-2022-MAR-EA000522). Next, the participants were recruited: 40 female master's students enrolled on a university Physical Education master's program at a university in Eastern Saudi Arabia and aged between 24 and 42 years old. The participants were randomly assigned to two groups, the experimental group ($n = 20$) and the control group ($n = 20$). The participants were then provided with an information sheet detailing the aims and procedure of the study before signing a consent form if they wished to join the study. All participants voluntarily participated and were notified of their entitlement to withdraw from the study at any given moment. The experimental group took part in the 3-day intervention program. A week before the intervention program, both groups filled out the Arabic-language ATIPE and SE-PETE-D to investigate their attitudes and

SE towards teaching children with hearing impairments prior to the intervention. Next, the experimental group joined the 3-day intervention program before completing both the Arabic-language ATIPE and SE-PETE-D again a week after participating in the intervention program. Meanwhile, the control group was not given the intervention. They completed the same questionnaires twice, once at the beginning of the study and once one week later.

2.5. Data Analysis

The overall scores from the ATIPE and SE-PETE-D were calculated as mean (M) scores and standard deviations (SD). Cronbach's alpha was used to examine the reliability of the ATIPE and SE-PETE-D instruments for measuring (i) the attitudes of participants toward including children with hearing impairments in PE classes, and (ii) the participants' degree of confidence in their ability to include children with hearing impairments in PE classes. Scores over 0.70 were considered acceptable [29]. Descriptive statistics were calculated for normality, homogeneity of variance, and sphericity to test the assumptions of the repeated measure ANOVA. The researcher used statistical tests to examine the differences in attitudes and SE scores between the experimental and control groups. The independent sample t-test was used for the data that was normally distributed, and the Mann-Whitney U test was used for the data that was not normally distributed. The researcher checked that the assumptions for the tests were met and then used a repeated measure ANOVA test to analyze the differences between the pre- and post-test ATIPE and SE-PETE-D scores, as well as any independent and covariate factors that might be present. Partial eta-squared (ηp^2) was employed to examine the efficacy of the intervention in terms of its effect size based on the mean differences between the pre- and post-intervention scores based on the following rationale: a small effect size is represented by values less than 0.02, a medium effect size is between 0.02 and 0.026, and a large effect size is indicated by values greater than 0.26 [30]. To perform all statistical analyses in the study, the researcher utilized the Statistical Package for the Social Sciences (SPSS) version 26.00 with a predetermined significance level of $p < 0.05$.

3. Results

3.1. Scale Reliability and Internal Consistency

Overall, the ATIPE and SE-PETE-D questionnaires showed good internal consistency, with Cronbach's alpha values of 0.75 and 0.93, respectively, for the pre-test and 0.78 and 0.95, respectively, for the post-test [31]. The KMO index was 0.73 for the pre-test ATIPE and 0.75 for the post-test ATIPE. Also, the KMO index was 0.80 for the pre-test SE-PETE-D and 0.83 for the post-test SE-PETE-D.

Four items on the ATIPE were deleted because their loadings were less than 0.30 [32] (i) "Since excellence is a major requirement, it is important to avoid any disturbance to the PE class, such as inclusion of children with disability", (ii) "Children with disability can profit a lot from PE classes", (iii) "Including a child with disability could enhance democratic and pluralistic values", and (iv) "The regular class can profit from the inclusion of a child with disability".

3.2. Demographic Characteristics

A total of 40 female master's students aged between 24 and 42 years old ($M_{\text{age}} = 28.80$; $SD = 4.165$; experimental group: $n = 20$; control group: $n = 20$) enrolled on a Physical Education master's program at a university in Eastern Saudi Arabia participated in this study. Table 1 illustrates that the majority of participants (i) do not hold a bachelor's degree in either PE or special education (72.5%), (ii) are not related to someone with a disability (95%), and do not have any experience teaching PE to children with hearing impairments (97.5%). Overall, 85% of the participants reported that they have not received any training on teaching children with hearing impairments, while only 15% felt that their master's studies had adequately prepared them to teach PE to children with hearing impairments. Significant differences between the research groups were not evident.

3.3. Differences in the Attitudes and Self-Efficacy Scores between Experimental and Control Groups

Table 2 shows that a repeated-measures ANOVA test determined that mean attitudes scores did not differ significantly over time ($F_{(1, 38)} = 2.238$; $p = 0.143$; $\eta p^2 = 0.056$, large) and between groups ($F_{(1, 38)} = 0.960$; $p = 0.334$; $\eta p^2 = 0.025$, moderate), and did not differ significantly in terms of interaction between time and group ($F_{(1, 38)} = 1.617$; $p = 0.211$; $\eta p^2 = 0.041$, large), respectively. However, the mean SE scores differed significantly across time and group ($F_{(1, 38)} = 8.730$; $p = 0.005$; $\eta p^2 = 0.187$, large) and ($F_{(1, 38)} = 10.544$; $p = 0.002$; $\eta p^2 = 0.217$, large), respectively. Therefore, we can conclude that the results of the ANOVA indicate a significant time and group effect on the experimental group's SE toward teaching children with hearing impairments in PE classes.

According to the result of the Bonferroni test (post-hoc analysis) (Table 3), the difference of the mean attitude scores between the pre-test and post-test was not statistically different for either group (control and experimental): $p = 0.875$ and $p = 0.058$, respectively. Despite such differences being non-significant, the difference between the pre-test and post-test scores among the participants of the experimental group was close to being significant ($p = 0.058$). The difference between the mean pre-test and post-test SE scores was only statistically different in the experimental group ($p = 0.007$).

Table 1. Descriptive statistics for demographic variables in both control and experimental groups.

Variable	Level	Control group		Experimental group		χ^2/Z	P
		n	%	n	%		
Major in BS	Physical education	0	0.0	7	35.0	4.201 ^a	0.122
	Special education	1	5.0	3	15.0		
	Other	19	95.0	10	50.0		
Having a family member with a disability	Yes	0	0.0	2	10.0	2.105 ^b	0.147
	No	20	100.0	18	90.0		
Having experience teaching children with disabilities	Yes	1	5.0	0	0.0	1.026 ^b	0.311
	No	19	95.0	20	100.0		
Training course in teaching hearing impairments	Yes, theoretical	2	10.0	4	20.0	0.784 ^b	0.376
	Yes, practical	0	0.0	0	0.0		
	Yes, both	0	0.0	0	0.0		
	No	18	90.0	16	80.0		
Feelings of preparedness	Never	10	50.0	8	40.0	0.889 ^b	0.641
	Little	8	40.0	8	40.0		
	A lot	2	10.0	4	20.0		
Participant age	M±SD	29.70±4.578		27.90±3.597		1.721 ^c	0.085

^a: Kruskal-Wallis 1-way ANOVA; ^b: Independent t-test; ^c: Mann-Whitney U test; M: mean, SD: standard deviation; BS: Bachelor degree

Table 2. Repeated measure ANOVA summary table for attitudes and self-efficacy scores.

Variable	Effect	MS	F	P	ηp^2
Attitudes	Time	0.661	2.238	0.143	0.056
	Group	0.219	0.960	0.334	0.025
	Time * Group	0.478	1.617	0.211	0.041
Self-efficacy	Time	7.14	8.730	0.005	0.187
	Group	5.151	10.544	0.002	0.217
	Time * Group	0.946	1.157	0.289	0.030

MS: Mean Square; F: F-ratio; ηp^2 : Partial eta-squared

Table 3. Pairwise comparison across time for both control and experimental groups.

		Pre-test			Post-test			Comparison between test	
Attitudes									
	N	Mean	SD	Comparison between group	N	Mean	SD	Comparison between group	
Group				P				P	P
Control	20	1.841	0.435	0.793	20	1.814	0.385	0.052	0.875
Experimental	20	1.891	0.723		20	1.555	0.430		0.058
Self-efficacy									
	N	Mean	SD	Comparison between group	N	Mean	SD	Comparison between group	
Group				P				P	P
Control	20	2.805	0.899	0.277	20	3.185	0.840	0.006	0.192
Experimental	20	3.095	0.759		20	3.910	0.721		0.007*

* The mean difference is significant at the .05 level Adjustment for multiple comparisons: Bonferroni.

4. Discussion

This study aimed to examine the effect of an IPA intervention program on Saudi graduate PE students' attitudes and SE toward teaching children with hearing impairments in an inclusive PE context. The researcher hypothesized that the IPA intervention program would enhance the experimental groups' attitudes and SE toward teaching children with hearing impairments compared to the control group. In general, the current study's findings indicated that the IPA intervention program positively developed the experimental groups' attitudes and SE in regard to teaching children with hearing impairments in PE classes. Despite such developments, significant differences were evident only in the experimental group's SE scores; the experimental groups' pre- and post-IPA intervention program attitude scores were close to being significant. A possible explanation for why the IPA intervention program did not significantly affect participants' attitudes toward teaching children with hearing impairments might be that the questionnaire was designed to examine physical educators' attitudes toward the inclusion of disabled children in general, while the SE questionnaire was developed to examine physical educators' SE toward the inclusion of children with hearing impairments specifically, with the latter being the main aim of the current IPA intervention program. Thus, given this interpretation, the findings of the current study suggest that the IPA intervention program on Saudi graduate students' attitudes and SE toward teaching children with hearing impairments in an inclusive PE context is relatively successful. In fact, regardless of whether the improvements were significant or not, the improvements in participants' attitudes and SE toward teaching children with hearing impairments inclusively found in the current study are encouraging, particularly since teaching disabled children in inclusive PE is an emerging concept in Saudi Arabia [33]. Nevertheless, to avoid such issues with content validity (i.e., using an attitudes questionnaire that was designed to examine physical educators' attitudes toward the inclusion of disabled children in general rather than using an instrument designed to measure participants' attitudes toward teaching children with hearing impairments specifically), one solution would be to use questionnaires that measure the specific type of disability under investigation.

The current study's findings were in line with previous studies that demonstrated significant and non-significant positive improvements in participants' attitudes and SE toward teaching children with different types of disabilities following the completion of subject-specific intervention programs. For example, Alhumaid et al.'s [26] study examined the impact of a 6-week adapted physical activity intervention program on male Saudi pre-service physical educators' SE toward including children with physical disabilities in PE settings. The authors reported

that the experimental group's SE toward such inclusion was significantly improved after completing the program compared to the control group. Moreover, Foley et al. [20] assessed the impact of a 1-week sports camp for visually impaired children as part of an undergraduate course for pre-service physical educators designed to enhance SE towards educating children with various disabilities (intellectual, physical, and visual) in PE classes. The results indicated that the participants' levels of SE towards instructing children with the above disabilities increased significantly following their participation in the program. In Spain, Jiménez-Monteagudo et al. [34] examined the effect of an intervention course structured in three parts (adapted physical activity and awareness of disability, inclusion paradigm, and para-sports) on Spanish pre-service physical educators' SE toward the inclusion of disabled children. The findings illustrated that the participants' SE towards the inclusion of disabled children in PE classes was significantly improved after they had completed the training course. Moreover, in the UK, Neville et al. [19] examined the influence of a 1-day PE workshop designed to enhance inclusivity by raising British pre-service physical educators' SE towards teaching disabled children. The authors reported that participants who took part in the workshop reported that the program had significantly improved their level of SE in relation to instructing disabled children. Finally, in a study conducted by Tindall et al. [22], the effectiveness of a 10-hour PE program on the SE of Irish pre-service physical educators in instructing children with diverse types of disabilities (such as intellectual disabilities, physical disabilities, behavioral disorders, or a combination of these disabilities) was investigated. The results of the study indicated a significant improvement in the SE scores of the participants towards teaching disabled children upon the completion of the program.

In terms of studies that found non-significant improvements in the effect of an intervention program designed to raise physical educators' attitudes and SE toward teaching children with different types of disabilities (i.e., similar to the current study's findings on the effect of the IPA intervention program on participants' attitudes towards teaching children with hearing impairments in PE classes), Tindall et al.'s [23] qualitative study examined the impact of a 10-hour PE program on Irish pre-service physical educators' attitudes toward teaching children with different types of disabilities (physical, intellectual, and learning). The findings suggested that the program positively affected teachers' attitudes toward teaching children with these disabilities. Moreover, Taliaferro and Harris' [35] study investigated the effect of a 1-day professional development workshop on American in-service physical educators' SE towards including children with autism in PE classes (experimental group: $n = 38$; control group: $n = 27$). Although the authors reported that the workshop improved participants' SE toward the inclusion of

children with autism, the workshop alone did not have a statistically significant impact on participants' SE toward such inclusion. The authors suggested several explanations to account for these findings, one of which was the study's small sample size ($N = 65$); therefore, further research on this area is critical [35]. In contrast to the above study, a Brazilian study by Haegele et al. [36] examined the effect of a 2-day professional development workshop on in-service physical educators' attitudes toward including disabled children in PE classes. Haegele and colleagues reported that despite the non-significant pre- and post-workshop differences between participants' attitudes scores, the scores on the acceptance of disabled children among the Brazilian participants increased from moderate (pre-workshop) to strong (post-workshop). Therefore, once even a small part of the objectives of such a workshop or program has been achieved (i.e., increasing physical educators' level of acceptance of disabled children), this may indicate the partial success of the program and enable it to be improved further based on its shortcomings when implementing it in the future.

Despite its strengths, three limitations of the current study should be acknowledged. First, the participants in the current study were all females. Although it would be more beneficial to include male participants, the current study was limited to females because the intervention program was applied in a female-only school as Saudi Arabian schools are entirely gender-segregated: female students are taught by female teachers and male students are taught by male teachers. Therefore, further research is required in male-only schools to compare the effects of the IPA intervention program between males and females. Second, the preparation and design of the IPA intervention program content could be considered as a limitation in this study as it was prepared and designed by the participants themselves as part of a practical exercise. That said, the participants used the evidence-based Inclusive-T guide [27] as the intervention program's primary reference to increase the efficacy and value of the existing IPA intervention program. Third, as the current IPA intervention program was part of a university exercise, it took place in a supportive and structured context; this may have artificially enhanced the participants' attitudes and SE scores.

5. Conclusions

The results indicate that the current IPA intervention program was effective in improving the participants' attitudes and SE toward inclusively teaching children with hearing impairments in PE settings in three ways: (i) by providing strategies and ideas for physical educators to include children with hearing impairments in PE classes, (ii) raising participants' awareness of the needs of such children to promote a more understanding and empathetic approach among the participants, and (iii) providing

participants with practical experience of applying inclusive teaching approaches. Therefore, these findings highlight that more efforts to provide practical experiences for pre-service (undergraduate and graduate levels) and in-service physical educators are critical to ensure the success of including disabled children in PE settings in Saudi Arabia and Arab countries more broadly.

Future research is encouraged to extend the current study's findings to investigate the effect of the IPA intervention program on different populations (e.g., undergraduate PE students and male physical educators) in terms of teaching children with different disabilities inclusively (e.g., children with autism). This will help to shed new light on the impact of specific-subject intervention programs designed to enhance physical educators' attitudes and SE toward providing inclusive learning environments for disabled children. It would be also helpful to conduct qualitative research to more comprehensively explore the deficiencies of the current intervention program, as well as ways to address such deficiencies. For example, using qualitative methods such as semi-structured interviews would likely reveal more insights into these issues, which would help to develop and improve them in line with the capabilities of the relevant stakeholders and the needs of these children.

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Conflicts of Interest

The author declares no conflict of interest.

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Institutional Review Board Statement

This study was approved by King Faisal University Research Ethics Committee (KFU-REC-2022-MAR-EA000522, approved on 22/03/2022) and conducted as per the guidelines of the Declaration of Helsinki.

Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

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