

Self-Assessment of Interprofessional Collaboration: Attitude and Experience of Pediatric Physical Therapists in the Clinical Context

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ABSTRACT

Background: Pediatric rehabilitation is a team-mission that plays an important role in providing comprehensive services by healthcare professionals with diverse academic and professional backgrounds to provide a high-level quality care for children. The Interprofessional education (IPE) is important foundation for Interprofessional collaboration (IPC) of the healthcare system. It positively affects patients and healthcare personnel, especially children and their families. **Objective:** To assess and compare the development of Interprofessional team collaboration between pediatric physical therapists (PTs), nurses and pediatricians and to assess particular attributes of these professionals that relate to their attitudes towards IPC.

Subjects and Methods: This cross-sectional study was carried out from April 2021 to May 2022, it included 182 medical staff workers of both genders; they held professional degrees and were currently working in governmental hospitals in pediatric settings. They were invited to complete personal information sheets, Assessment of Interprofessional Team Collaboration Scale-II (AITCS-II) and Adapted Version of Attitudes Toward Interprofessional Healthcare Teams Scale (ATHCTS). Data were collected and analysed using one-way-MANOVA for quantitative analysis and unpaired t-test for descriptive data.

Results: Comparison of overall scores of both AITCS-II and ATHCTS between physical therapists, nurses and pediatricians indicated non-significant differences. Non-Significant effects were found regarding gender and working periods as a team member (in years) among all professional categories ($P > 0.05$). Comparison between different clinical experience categories AITCS-II were statistically significant ($P < 0.05$), however the corresponding values of ATHCTS revealed nonsignificant differences ($P > 0.05$).

Conclusion: There is an evident degree of IPC between pediatric PTs, nurses and pediatricians. Participants' attitudes were positive toward interprofessional health care teams. However, further IPE programs can lay better foundation for achieving IPC in order to guarantee higher-quality health service and better patient outcomes.

Keywords: Interprofessional Collaboration, Interprofessional Education, Self-assessment, Pediatric Physical Therapists, Healthcare.

INTRODUCTION

Many professions work together collaboratively to provide optimal healthcare services⁽¹⁾, interdisciplinary collaboration is clear requirement to achieve high quality healthcare to the community. Absence of interdisciplinary teamwork leads to serious breakdowns in the healthcare hierarchy, while its presence, on the other hand, improves both health service and outcomes⁽²⁾. Pediatric rehabilitation is composed of comprehensive services in which a wide range of healthcare professionals with diverse professional backgrounds participate to provide high-quality service to patients. Interprofessional education (IPE) is important for Interprofessional collaboration (IPC) in the healthcare system. It positively affects patients and healthcare providers, particularly in pediatrics, and it is essential to provide sufficient care to patients and caregivers⁽³⁾.

Interprofessional competencies in healthcare mean to integrally apply knowledge, skill, values and attitudes that ensure collaborative working among professionals, with their colleagues, patients, families and communities. It aims to improve health outcomes in clinical settings⁽⁴⁾. IPE is a precursor to IPC; especially in terms of acquiring the fundamental skills and competencies required for Interprofessional work⁽⁵⁻⁸⁾.

Interprofessional collaborative practice (IPCP) is made to enhance the active participation of individual disciplines in healthcare⁽⁹⁾. It facilitates patient and family-centred objectives and values, provides a mechanism for successful communication between caregivers, enhances staff involvement in clinical decision-making and promotes mutual respect among all professionals⁽¹⁰⁾. Future healthcare professionals may be better suited for their future work in interdisciplinary teams. The harmony between several professionals, especially in pediatrics, is a cornerstone in patient care^(8, 11-13). The high proportion of comorbidities and the disease complexity have made it more vivid that IPC is an inevitable, yet overlooked, component in the healthcare plan⁽¹⁴⁾.

Investigating the effectiveness of expert collaboration necessitates further exploration of healthcare professionals' expertise and attitudes toward IPE and IPC. This study aimed to evaluate the IPC between pediatric physical therapists (PPTs), pediatricians and nurses in clinical pediatric settings. Consequently, feedback can be used to improve Interprofessional team collaboration in pediatric settings and provide guidance for hospitals to improve service quality and patient needs.

SUBJECTS AND METHODS

Study Design:

A cross-sectional qualitative design was used to investigate the development and integration of IPC. Taking into consideration the inclusion criteria of participants, a convenient and stratified sampling technique was followed to recruit the study participants. The study was carried out from April 2021 to May 2022.

Ethical Considerations:

The protocol of this study was approved by the Ethical Committee of the Faculty of Physical Therapy of Cairo University (No: P.T.REC/012/003214) as well as endorsements from Abo El-Reesh Hospital at Cairo University and Children University Hospital were obtained before preceding the study procedures.

All participants consented to taking part in this study by signing a consent form and they were assured of the confidentiality of their responses. This work has been carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for studies involving humans.

Subjects:

The total sample size was calculated to be 165 participants (Pediatric PTs, nurses and pediatricians) with 2:1:1 ratio. The presumed effect size was based on a pilot study of 15 individuals in each category. The sample size was calculated considering the difference in AITCS II scores among the 3 groups to be $f = 0.309$ (effect size), significance level = 0.05, and with 95% power. Sample size calculation was conducted using G*power statistical software [version 3.1.9.2; Universitat Kiel, Germany] f tests - One way MANOVA.

This study included 182 medical professionals (Pediatric PTs, nurses and pediatricians) from governmental hospitals in Egypt. Participants were enrolled in the study in accordance with the results of sampling size estimation taking into consideration, the inclusion criteria of the participants (Table 1).

Table (1): Inclusion and Exclusion Criteria

Inclusion criteria	Exclusion criteria
Both genders	Healthcare students
On current job at a governmental hospital in any pediatric settings (e.g., inpatient and outpatient clinics)	Newly hired graduates
Holding professional degree	Had broken legal and/or professional legislations
Holding one of different clinical positions (e.g., general practitioners, specialists and consultants)	Not willing to participate in this study

Venue:

The study was carried out in two large governmental university hospitals, including Abo El Reesh Hospital at Cairo University and Children University Hospital at Mansoura University. Formal permission from the heads of the selected hospitals was taken before starting data collection.

Assessment and Data Collection Procedures:

This study was carried out in both paper-based format and online google form. Participants were required to fill their personal information in order to collect person related variables. The information required was: name, age, gender, date of graduation from the faculty, current position, the highest scientific certificate obtained, years in practice (since obtaining licensure to practice); duration spent with current team, and participation in any abroad mobility or professional training programs. Moreover, both mailing address and telephone number were included.

Measurements:

After filling personal information, participants filled the following two scales:

1-Assessment of Interprofessional Team Collaboration Scale II (AITCS-II):

It is a valid and reliable tool that was used for assessment of IPC between the PPTs, pediatricians and nurses in the pediatric healthcare setting. The scale is a self-administered questionnaire in which the professional answers to 23 statements/questions related to individual factors, indicating how teams work and act. The items in the scale represent three rationally determined subscales: a) Partnership: b) Cooperation c) Coordination⁽¹⁵⁾.

The AITCS-II items incorporated a 5-point Likert scale⁽¹⁶⁾ (with 5=always, 4 = most of the time, 3 = occasionally, 2 = rarely and 1= never) allowing respondents to rate their current feeling about their team and themselves, as a member of the team. Each participant was instructed to circle the value which best reflects how he/she currently feel, as a member of the team, work or act within the team. The AITCS-II produces scores from 23 to 115. Higher scores indicate effective collaborative process in health care to manage complex practice situations, which require systematic and informed collaboration between the professional specialist and other professional health team.

2-Adapted Version of Attitudes toward Interprofessional Healthcare Teams Scale (ATHCTS)

It is a valid and reliable tool, which can be used to evaluate the attitudes toward Interprofessional healthcare teams and the attitudes toward Interprofessional education and collaborative practice ATHCTS scale consists of 14 items that measure attitudes toward Interprofessional healthcare teams⁽¹⁷⁻¹⁹⁾. Responses were scored on a 5-point Likert scale⁽²⁰⁾, ranging from one (strongly disagree) to five (strongly agree). Because items 2, 6 and 9 of the ATHCTS are

negatively worded, they were coded prior to the calculation of the over-all mean score. Total scores ranged from 14 to 70, with higher scores indicate more positive attitudes toward interprofessional health care teams.

Both the questionnaires including AITCS-II and ATHCTS had been coded for each category to ensure participant anonymity, privacy and confidentiality. The survey was accessible for four weeks from the initial distribution.

Statistical Analysis

All statistical analyses were carried out via Statistical Package for the Social Sciences (SPSS, Inc., Chicago, IL) version 25 for windows. Descriptive statistics of mean, SD and frequencies were used to represent participants' demographics. One-way

MANOVA was conducted for comparison of ATHCTS and AITCS-II between different categories. Unpaired t-test was conducted for comparing ATHCTS and AITCS-II between females and males. Statistical significance level was set at $p < 0.05$.

RESULTS

The current study was carried out in both paper-based format (n= 82) and online google form (n= 100). The demographic and basic data for 182 participants have been collected and analysed. **Table (2)** indicates the analysis of subject characteristics data that included participants' gender, higher qualification degree, clinical experience in years and duration of working as a team member in years.

Table (2): Participant's characteristics

Characteristics		Total study group (N= 182)	Pediatric PTs (N= 95)	Nurses (N= 45)	Pediatricians (N= 42)
Gender	Females	112 (61.5%)	59 (62.1%)	39 (86.7%)	14 (33.3%)
	Males	70 (38.5%)	36 (37.9%)	6 (13.3%)	28 (66.7%)
Higher qualification degree	Bachelor	100 (54.9%)	65(68.4%)	26 (57.8%)	9 (21.4%)
	Diploma	25 (13.7%)	2 (2.1%)	14 (31.1%)	9 (21.4%)
	Master	41 (22.5%)	19 (20%)	4 (8.9%)	18 (42.9%)
	PhD	16 (8.8%)	9 (9.5%)	1 (2.2%)	6 (14.3%)
Clinical experience (years)	>10 years	72 (39.6%)	28 (29.5%)	21 (46.7%)	23 (54.8%)
	6-10 years	74 (40.7%)	52 (54.7%)	12 (26.7%)	10 (23.8%)
	1-5 years	36 (19.8%)	15 (15.8%)	12 (26.7%)	9 (21.4%)
Working period as a team member (years)	> 10 years	33 (18.1%)	4 (4.2%)	11 (24.4%)	18 (42.9%)
	6-10 years	44 (24.2%)	29 (30.5%)	8 (17.8%)	7 (16.7%)
	1-5 years	105 (57.7%)	62 (65.3%)	26 (57.8%)	17 (40.5%)

Table (3) indicates analysis of the assessment of interprofessional team collaboration by AITCS-II that investigated participants' partnership, cooperation and coordination. Comparison between the mean values of AITCS-II overall score indicated non-significant difference in the AITCS-II overall score between pediatric PTs, nurses, and pediatricians.

Table (3): Assessment of interprofessional team collaboration by AITCS-II for pediatric paediatric PTs, nurses and pediatricians

hAITCS-II	Pediatric PTs	Nurses	Pediatricians	Total
	Mean (±SD)	Mean (±SD)	Mean (±SD)	Mean (±SD)
Partnership	3.82 (0.67)	3.35 (0.74)	3.61 (0.82)	3.66 (0.75)
Cooperation	3.97 (0.61)	4.16 (0.31)	4.21 (0.48)	4.08 (0.53)
Coordination	3.64 (0.68)	4.10 (0.39)	4.04 (0.59)	3.85 (0.64)
Overall score	3.81 (0.57)	3.87 (0.33)	3.95 (0.34)	3.86 (0.47)

AITCS-II= Assessment of Interprofessional Team Collaboration Scale, SD=Standard deviation

Regarding gender of participants, the mean value \pm SD of AITCS-II overall score of females was 3.84 ± 0.48 , while that of male was 3.89 ± 0.46 ; there was non-significant difference between females and males.

Table (4) illustrates the comparison of overall score of AITCS-II between different clinical experience categories, which revealed significant differences, however between different working periods as a team member revealed non-significant differences.

Table (4): Comparison of overall score of AITCS-II between different clinical experience categories and working periods as a team member

Characteristic	AITCS-II (Mean \pm SD)			P-value	Sig
	> 10 years	6-10 years	1-5 years		
Clinical experience (years)	3.96 ± 0.37	3.73 ± 0.57	3.91 ± 0.41	0.01	S
Working periods as a team member (years)	3.87 ± 0.39	3.98 ± 0.45	3.81 ± 0.51	0.11	NS

Sig=Significance, NS= Non-significant, S=Significant,

The mean value \pm SD of Attitudes toward Interprofessional Healthcare Teams Scale (ATHCTS) overall scores was 3.87 ± 0.4 ; that means the attitude of the study group ranged from neutral to agree.

The highest mean of 4.44 ± 0.68 was for statement 8 “The interprofessional approach improves the quality of care to patients/clients”, followed by the mean for statement 4 “The interprofessional approach makes the delivery of care more efficient” with the mean of 4.32 ± 0.67 .

The lowest mean of 2.68 ± 1.17 was for statement 6 “Working in an interprofessional manner unnecessarily complicates things most of the time.” followed by the mean for statement 9 “In most instances, the time required for interprofessional consultations could be better spent in other ways” with the mean of 2.91 ± 1.12 .

Regarding gender of participants, the mean value \pm SD of ATHCTS of females was 3.88 ± 0.41 and that of males was 3.85 ± 0.39 ; the difference between both sexes was insignificant. **Table (5)** illustrates the comparison of overall score of ATHCTS between different clinical experience categories and working periods as a team member, which revealed non-significant differences.

Table (5): Comparison of overall scores of ATHCTS between different clinical experience categories and working periods as a team member

Characteristic	ATHCTS (Mean \pm SD)			P-value	Sig
	> 10 years	6-10 years	1-5 years		
Clinical experience (years)	3.87 ± 0.41	3.86 ± 0.38	3.86 ± 0.40	0.99	NS
Working periods as a team member (years)	3.78 ± 0.39	3.96 ± 0.42	3.84 ± 0.39	0.12	NS

Sig=Significance, NS= Non-significant

DISCUSSION

Comprehensive patient care often includes issues that are beyond the scope of experience or clinical training of a single professional. The patient’s care includes different healthcare professionals, each with distinct and essential knowledge, technical skills and points of view⁽²¹⁾. In pediatrics and all other disciplines dealing with the medical care of children, importance of IPE and IPC was emphasized where all professional groups including physicians, PTs, nurses, social workers and educators must work together for the benefit of the children and their environment⁽²²⁾.

Results of this study showed that the highest percentage of the participants in both pediatric PTs and nurses categories were females, the corresponding ratios were 62.1% and 86.7%, respectively, while the lowest percentage of females was represented by the pediatricians category (33.3 %); which may reflect the dominant gender of each professional category in the Egyptian society. These results come in agreement with **Darlow et al.**⁽²³⁾, **Hellman et al.**⁽²⁴⁾, **Sari et al.**⁽²⁵⁾, **Haruta et al.**⁽²⁶⁾, **Marcussen et al.**⁽²⁷⁾ and **Mink et al.**⁽²⁸⁾ who indicated that females were the most dominant participants in their studies. Comparing the overall scores between both males and females in all included clinical professional categories with respect to both AITCS-II and ATHCTS indicated non-significant differences, which revealed that gender had neither an effect on skilful practicing of IPC nor on the attitude towards interprofessional health team. These findings disagree with the findings of **Ko et al.**⁽¹⁹⁾, who claimed that females in health care teams had more positive attitudes towards IPC. On the contrary, the results of this study are supported by **Mink et al.**⁽²⁸⁾, who reported that no significant differences had been found between the attitude of males and females towards Interprofessional health team.

The mean value of overall score of ATHCTS was 3.87 ± 0.40 which means that the attitude of PPTs, nurses and pediatricians toward interprofessional health care teams ranged from neutral to agree. These findings indicated reasonable level of achievement in both IPC including partnership, cooperation and coordination as well as their attitudes toward interprofessional health care teams. Comparison between the overall scores of mean values of AITCS-II of PPTs, nurses and pediatricians revealed non-significant differences. The

findings of the present study demonstrated similar purposeful levels between PPTs, nurses and pediatricians, which demonstrate effective partnership, cooperation and coordination between all clinical professional categories. These findings cannot give sufficient evidence to support **Haruta et al.** ⁽²⁶⁾, who reported that nurses play a significant role in IPC and should therefore be more familiar with IPC. Comparison between overall scores of mean values of ATHCTS in PPTs, nurses and pediatricians showed non-significant differences, which reflected similar levels of interprofessional approaches that permitted communication and collaboration among members of the teams to achieve the approved targets.

Comparison between mean values of partnership, cooperation and coordination components of AITCS-II of PPTs, nurses and pediatricians, indicated that the component of cooperation showed the highest mean values by all the clinical professional categories, consequently it had the highest sum as compared to the other components. These results indicated effective sharing of knowledge and skills between clinical professional categories, which was concomitant with effective reflective reviews between team members. Respect, trust and honest were considered values of the team members. The lowest mean values of AITCS-II were indicated in the coordination component by PPTs and the partnership component by both the nurses and the pediatricians. These relatively average mean values revealed difficulty in achieving the indicators of the partnership and coordination components, which may be attributed to lack of IPC training that aimed to involve patients in setting of their goals and treatment plans as well as working with them and their relatives in adjusting their care plans.

According to the results of the present study, it should be emphasized that responses of the participants of all clinical professional categories to AITCS-II and ATHCTS scales were variable among their different components and items, which were attributed mainly to the individual attitude towards interprofessional health care teams, previous clinical experience, personal interest, desire, level of satisfaction, with implementation of IPC, level of the academic qualification and contribution in the IPE programs and IPC training programs, which are considered most influential in the effective answering of both scales. **Hind et al.** ⁽²⁹⁾ reported that a positive attitude towards other professionals influenced the quality of teamwork. Researchers studying IPC have found that attitudes toward health care teams might make contributions to figuring out whether or not specialists working with different specialists as a team ^(20, 30). It was reported that IPE was successful in improving participant's attitudes towards health care teamwork and was a satisfactory learning experience for nursing and allied health staff ⁽³¹⁾.

The findings of this study indicated some barriers that resulted in an ineffective delivery of IPC initiatives such as curriculum challenges e.g., lack of IPE and insufficient training to implement IPC. When these issues are not addressed, IPE programs in higher education institutions can stagnate or become non-existent. **Katoue et al.** ⁽³²⁾ stated that lack of IPC may be due to lack of cross-discipline curriculum structure and shared learning spaces and consequently lack of training to implement IPC. Another factor for insufficient IPC may include also managerial obstacles at the levels of the clinical departments, which may be due to the strict administrative rules of the hospitals. These findings are in line with **Lash et al.** ⁽³³⁾ who reported that hospital leadership insufficiency in support implementation of IPC is considered a critical issue.

The findings of this study indicated that there are many prerequisites for IPC that need to be enhanced, for instance; the need of the organizational support for implementation of IPE and IPC, development of a strategy to enhance health care teams to work together, and enhancement of continuing education programs of IPE, which offered through workshops, seminars and training programs that are essential to enhance implementation of IPC. These findings come in accordance with the findings of **Tataw et al.** ⁽²⁾ and **Zwarenstein** ⁽³⁴⁾, who stated that poor IPC can have a negative impact on the quality of patient care. They emphasized that the skills of teamwork among professionals acquired through IPE are important for high-quality care. **Connolly et al.** ⁽²¹⁾ mentioned that without IPC, team members may not be able to reach agreement with each other or with patients about urgent decisions, or interprofessional teams may make decisions on behalf of patients without their participation. The outcomes of the present study demonstrated the need to support IPE and implement more effectively IPC at various levels of undergraduate and postgraduate studies of PPTs, nurses, and pediatricians. These findings are in line with **Lee et al.** ⁽³⁵⁾ findings who stated that IPC enhances developing and maintaining of productive working relationships between clinical professionals, patients, clients, families and communities to deliver optimal health outcomes.

According to the outcomes of the present study, it should be emphasized that there is an essential need for delivering of IPE programs, which is contributing for enhancement of IPC between PPTs, nurses and pediatricians. These outcomes are supported by **Ansa et al.** ⁽¹⁴⁾ who reported that future health care professionals might be better prepared for their later work in interprofessional teams.

Further studies are required to compare partnership, cooperation and coordination components of AITCS-II at the group level of PPTs, nurses and pediatricians. Simultaneously, assessment of the effect of age, gender and clinical experience on the development of IPC and the attitudes towards

interprofessional health care teams at each group level is recommended in further studies.

CONCLUSION

There is a pronounced degree of IPC between professionals involved in pediatric rehabilitation. However, further IPE programs can lay better foundation for achieving IPC in order to guarantee higher-quality health service and better patient outcomes.

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