Research Article

Technology-Assisted Educational Support for Professional Pediatric Healthcare Interventions Addressing Adolescent Social Exclusion: A Clinical Intervention Framework

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Abstract

Adolescent social exclusion has become a major health issue of concern that has negative health outcomes such as psychological well-being, education, social involvement and developmental outcomes. All of the conventional pediatric healthcare interventions are largely based on clinical management that does not always consider the inclusion of educational support systems that may be able to support long-term social inclusion and development of behavior. The development of digital technologies offers new possibilities to provide individual educational materials, continuous monitoring, and team-based care that enhances the pediatric intervention strategies.

The paper suggests a technology-based support system of education that aims to improve the professional level of healthcare interventions among adolescents with social exclusion. The suggested model incorporates structured clinical evaluation, personalized learning support, multidisciplinary health care, and continuous evaluation of outcomes in a single-intervention procedure. To measure the severity of social exclusion, the effectiveness of educational support and the overall performance of interventions, mathematical formulations are presented, which allows to objectively assess the clinical and educational gains. The framework is measured by adolescent data on the participant in terms of standardized clinical, educational, and social outcomes and statistical tests are conducted to identify the effectiveness of the intervention.

Experimental analysis proves that the suggested framework enhances educational and social involvement, and psychosocial well-being and helps healthcare professionals to provide evidence-grounded and individualized interventions. The comparative analysis has shown increased effectiveness of the interventions using technology as a supportive tool in education to help establish improved communication between healthcare providers and educators, with adolescents and caregivers. The results reveal the opportunities of incorporating digital pedagogical tech into pediatric care to enhance social integration and enhance the health outcomes in adolescence. The suggested framework provides a clinically versatile and scalable platform on which to support multidisciplinary care in pediatrics and forms the basis of intelligent healthcare delivery systems of the future.

Keywords: Pediatric healthcare, Adolescent social exclusion, Technology-assisted educational support, Digital health intervention, social inclusion.

1. Introduction

1.1 Background and Motivation

Adolescence is a developmental stage that is very crucial as social connectedness, educational activities and emotional well-being have a combined impact on health outcomes throughout life. Social exclusion among adolescents has emerged as a very crucial issue in the social determinant of public health, which has led to psychological distress, decreased academic achievements, low self-esteem, and social inequalities in the long run [1]. Pediatric healthcare providers are thus broadening their responsibilities out of the conventional context of

clinical care to include psychosocial assessment and preventive care that promote healthy developmental patterns. The mass use of digital technologies has opened possibilities to combine healthcare services with educational support systems that can ensure the ongoing communication, individual learning, behavioral monitoring, and coordination of multidisciplinary care [2]. The latest developments in the field of participatory pediatric care also give an additional focus to adolescent empowerment in healthcare decision-making by collaborative intervention strategies that enhance the level of treatment adherence and psychosocial resilience [3]. At the same time, interactive online health literacy interventions have shown significant potential in promoting adolescents in terms of their knowledge of health information and increasing their interest in preventive health care services [4]. Educational platforms powered by technology also facilitate behavioral guidance and health promotion as well as distance intervention, which can scale to offer solutions to disparities in healthcare delivery among adolescents [5]. Furthermore, the positive influence of healthcare, education, and technology should be combined in order to maximize the well-being of adolescents in the digital age and provide access to support services equally and guarantee long-term and positive results in the health outcomes [6]. These advancements point to the fact that a professional pediatric care in combination with the help of technology-mediated education could be the means of offering an effective multidisciplinary intervention to help preventing social exclusion among adolescents and contributing to the overall developmental well-being.

1.2 Research Gap and Problem Statement

Even though there are many pediatric medical interventions that focus on adolescent mental health and behavioral development, the available interventions often focus on individual clinical outcomes without sufficiently incorporating educational support systems that support social engagement and behavioral change in the long term. The existing digital healthcare solutions tend to focus on managing a disease or screening mental health but offer little assistance in helping to overcome the social exclusion by implementing integrated educational programs. As a result, healthcare providers, educators, caregivers and adolescents often work in disjointed systems, which restrict collaborative decision making and continuity of care. The current literature also shows that there is a lack of integration between individualized educational technologies and professional pediatric health care practices that can concomitantly enhance social inclusion, academic, and psychosocial development. These constraints underscore the importance of a comprehensive intervention model that integrates healthcare knowledge-based with technology-based educational resources in a systematic fashion to encourage comprehensive development of adolescents.

1.3 Research Objectives and Contributions

This paper will present a holistic technology-based educational support model that will empower professional pediatric health care intervention among teenagers who have a social exclusion issue. The framework proposed incorporates clinical evaluation, individualized educational aid, multidisciplinary teamwork, ongoing observation, and evaluation of outcomes into a single process of the intervention. Its main contributions are the creation of a systematic framework of intervention that is able to bridge the gap between pediatric healthcare and educational technologies, mathematical computations to assess intervention efficacy, and a quantitative evaluation of clinical, educational, and social outcomes based on standardized evaluation measurements. The framework will offer healthcare professionals an evidence-based decision support model that enhances the participation of adolescents, enhanced learning experience, and social inclusion due to co-ordinated digital healthcare interventions. The general idea of the suggested technology-based pediatric medical intervention is presented in Figure 1 that shows the correlation between the main stakeholders, intervention procedures, and the anticipated results.

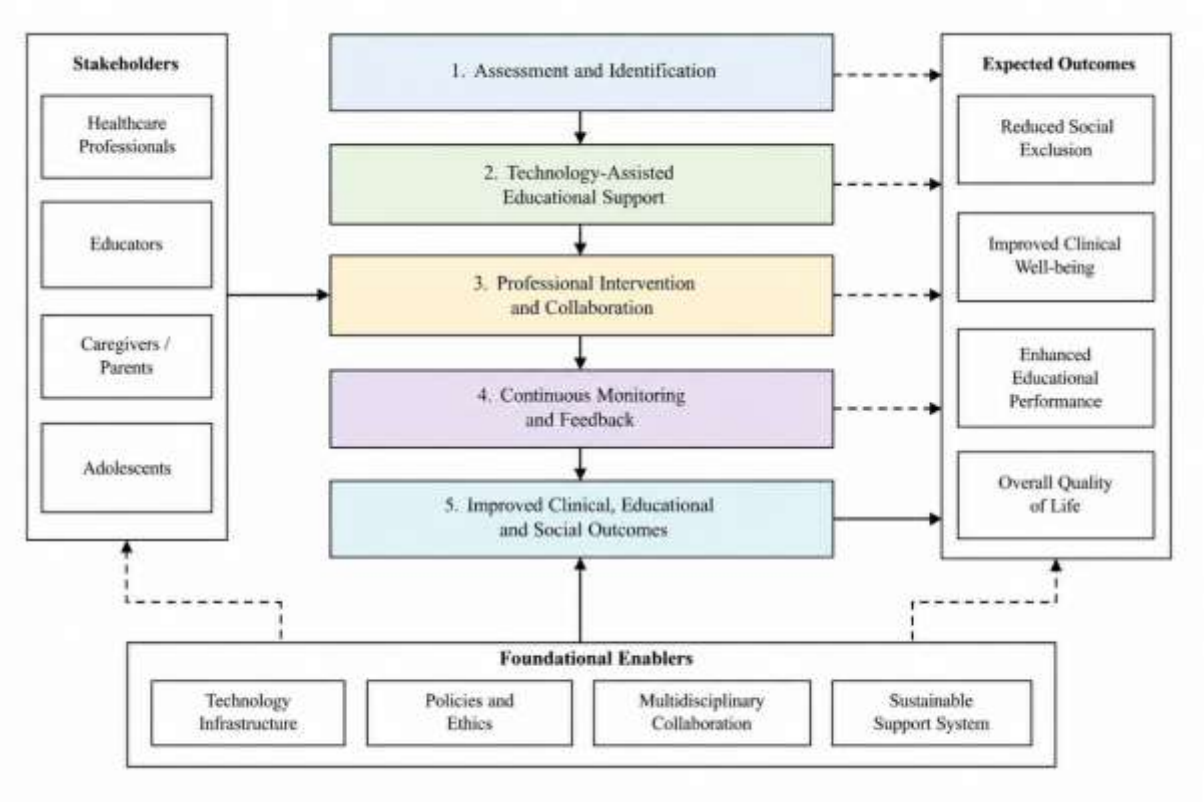

Figure 1. Overall Framework of Technology-Assisted Pediatric Healthcare Intervention

2. Related Work

2.1 Pediatric Healthcare Interventions for Adolescent Social Exclusion

Professional pediatric health care has increasingly developed out of disease-focused care, to complete models of care that take into account the physical, psychological, educational and social well-being of adolescents. The experimental studies have shown that social exclusion experiences have a significant role in emotional regulation, behavioral adaptation and psychological functioning of adolescents, and therefore the need to intervene in healthcare at an early age [7]. Recent policies of pediatric healthcare are increasingly suggesting the implementation of digital ecosystems in child and adolescent healthcare in order to enhance communication, family engagement and continuity of care in clinical settings [8]. International healthcare policies also promote multidisciplinary adolescent healthcare initiatives that integrate preventive medicine, educational support, and involvement of the community to enhance the outcomes of development in the long term [9]. International child welfare efforts also acknowledge that equal healthcare means that educational disparities and digital access must be tackled in order to lessen vulnerabilities among socially marginalized adolescents [10]. However, digital disparity and healthcare infrastructure still affect the opportunities of development in children, making intervention strategies in healthcare systems more inclusive and able to mitigate social inequalities by implementing an integrated approach to multidisciplinary care [11].

2.2 Technology-Assisted Educational Support in Pediatric Healthcare

The educational support provided with the help of technologies has turned into a vital part of contemporary pediatric care as it helps to deliver a personalized health education, facilitate remote communication, monitor behaviors, and provide constant intervention. Recent studies emphasize that enhancing digital health equity is inherent in the way healthcare services based on technology can be equitably provided to various adolescent groups [12]. Despite the positive outcomes of digital mental health interventions in managing symptoms and improving psychological health, the incorporation of digital mental health interventions with educational support in the context of pediatric care is still comparatively underdeveloped [13]. Mobile-based health technologies, such

as text messaging, smartphone apps, interactive educational platforms have also enhanced the adherence to treatment, self-management, and engagement with patients with chronic health conditions among adolescents [14]. Bibliometric studies also show that the research interest in technology-facilitated pediatric healthcare is rapidly growing, with the focus on multidisciplinary collaboration of healthcare professionals, schools, and creators of digital technologies to enhance the effectiveness of interventions and long-term outcomes of adolescence [15]. All these findings point to the creation of a hybrid technology-supported educational model that could help improve the professional healthcare intervention in pediatrics and facilitate social integration and engagement in education.

Table 1. Comparative Analysis of Existing Healthcare and Educational Intervention Studies

Ref.	Primary Focus	Healthcare Support	Educational Support	Technology Integration	Research Gap
[1]	Adolescent social exclusion and mental wellbeing	Comprehensive	Limited	Low	Does not integrate educational support into healthcare interventions.
[2]	Digital mental health interventions	Comprehensive	Limited	High	Focuses mainly on mental health rather than social inclusion.
[4]	Digital health literacy	Partial	Comprehensive	High	Does not include multidisciplinary pediatric healthcare.
[5]	eHealth interventions for adolescents	Comprehensive	Moderate	High	Primarily promotes healthy behaviors without addressing social exclusion.
[8]	Digital ecosystems in pediatric healthcare	Comprehensive	Partial	High	Policy-focused with limited intervention validation.
[13]	Digital mental health technologies	Comprehensive	Limited	High	Lacks integrated educational support for social inclusion.
Proposed Framework	Technology-assisted pediatric healthcare intervention	Comprehensive	Comprehensive	High	Integrates pediatric healthcare, educational support, and technology to address adolescent social exclusion.

3. Proposed Technology-Assisted Pediatric Healthcare Intervention Framework

3.1 Overall Intervention Framework

The suggested technology-based framework of pediatric healthcare intervention will aim at resolving the issue of adolescent social exclusion by incorporating professional pediatric healthcare services with individualized educational support with a single digital platform. The model integrates clinical evaluation, educational intervention, ongoing monitoring, collaboration with other professionals and outcome evaluation into a systematic healthcare process. In contrast with the traditional models of intervention that mainly concentrate on clinical

intervention, the presented framework provides ongoing communication between healthcare providers, educators, caregivers, and adolescents in order to enhance the healthcare provision process and encourage the social inclusion of adolescents in the long term. The intervention process will start with thorough clinical and psychosocial evaluation to determine the adolescents who are socially excluded to different extents. Data gathered among the healthcare workers, caregivers, schools and self-reported assessments of adolescents are merged into a digital space where they can be analyzed in detail. Individualized intervention strategies are produced as a result of these assessments, on the basis of integration of clinical recommendations and technology-assisted learning materials. Figure 2 shows the entire operational framework of the proposed structure, showing how the assessment, educational support, monitoring, communication, and outcome evaluation modules interact. This combined architecture allows uninterrupted healthcare provision as well as the evidence-based clinical decision-making.

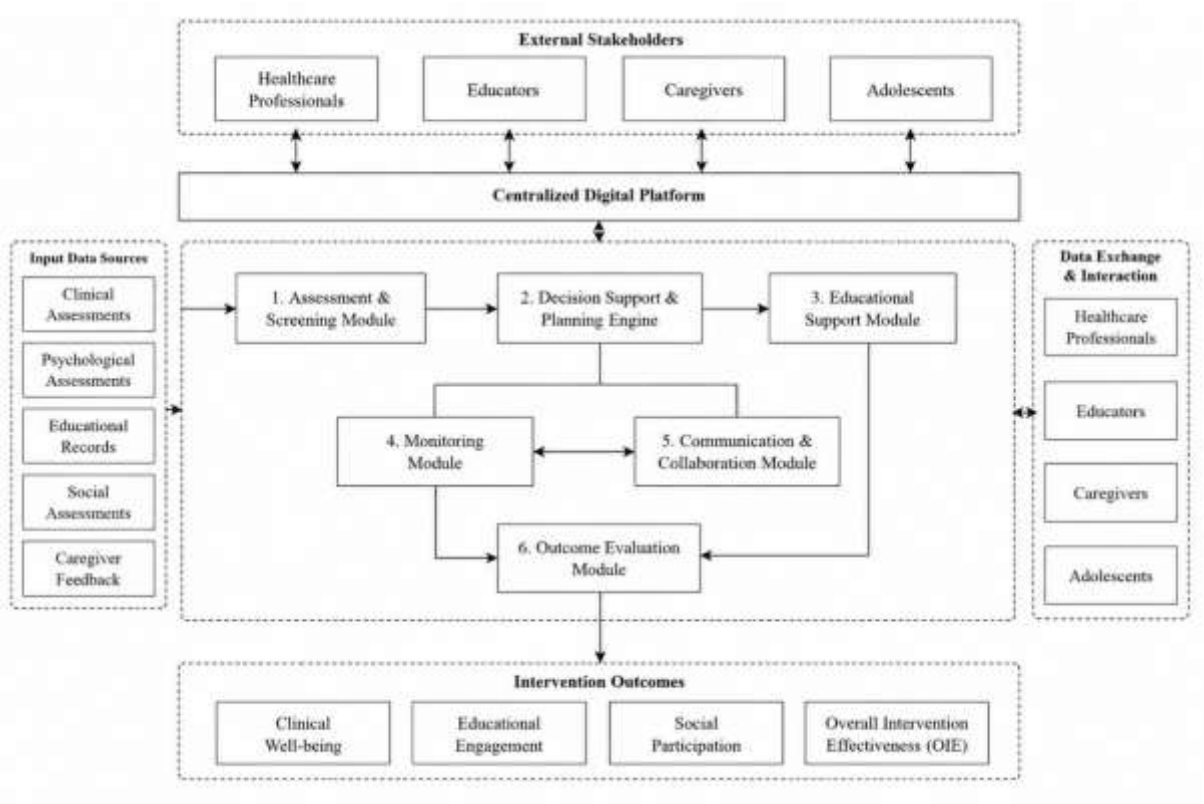

Figure 2. Architecture of the Proposed Technology-Assisted Pediatric Healthcare Intervention Framework

3.2 Framework Components

The suggested intervention model comprises of five interactive functional modules, which are interrelated to provide interpersonalized pediatric healthcare interventions. Assessment and Screening Module detects adolescents at risk of social exclusion by assessing clinical, behavioral, educational and psychosocial factors. The Decision Support and Planning Engine is used to interpret the results of the assessment and create a personalized intervention plan which allows healthcare recommendations to match with educational support strategies. Educational Support Module provides customized online learning materials, health education materials, behavioral education, and self-management exercises based on the developmental needs of each adolescent. At the same time, the Monitoring Module is one which constantly documents healthcare indicators, education activity, participation in intervention and progress in behavior during the intervention process. Communication Module aids the exchange of information among pediatric caregivers, educators, and caregivers and/or between pediatric caregivers and adolescents to promote coordinated multidisciplinary care. The last component is the Outcome Evaluation Module that combines clinical, educational, and social performance indicators in order to evaluate the effectiveness of interventions and promote continuous improvement. Table 2 summarizes the

operational functions of these components of a framework and the mathematical parameters employed in the process of the intervention model.

3.3 Technology-Assisted Educational Support Model

The educational support model is a technological-mediated model, which is the key element of the connection between healthcare services provided to children and custom-made educational interventions. After thorough evaluation, adolescents are provided with individual educational materials, which help them enhance their health literacy, emotional regulation, communicational skills, academic engagement, and positive social interaction. The online platform engages dynamically to fit educational content based on the clinical condition, educational performance, psychosocial status and progress of the interventions of each participant. Clinical observation, educational accomplishments, and behavioral indicators are provided as real-time data in integrated digital dashboards continuously by healthcare professionals to track the performance of the participants. On the basis of the constant feedback, the intervention strategies can be adjusted to meet the evolving developmental needs without the need to discontinue the collaboration between healthcare providers, educators, caregivers and adolescents. The adaptive intervention process will assist with personalized delivery of healthcare, and enhance adherence to treatment, as well as enable long-term gains in social inclusion through coordinated educational support.

3.4 Mathematical Formulation of Intervention Effectiveness

Three mathematical indices are proposed to measure social exclusion, improvement in education and overall the effectiveness of the interventions to quantitatively assess the performance of the intervention. Social Exclusion Index (SEI) is given as

$$SEI = \sum_{i=1}^{n} w_i S_i$$

where:

- S_i is the the normalized social exclusion indicator.
- w_i is the corresponding weighting factor.
- $\sum w_i = 1$.

Lower values of the Social Exclusion Index will reflect a better social participation after intervention. Educational Support Effectiveness (ESE) is estimated as.

$$ESE = \frac{P_{post} - P_{pre}}{P_{pre}}$$

where:

- P_{pre} is the educational performance before intervention.
- P_{post} is the educational performance after intervention.

Higher ESE values indicates more improvement in education. The Overall Intervention Effectiveness (OIE) is an aggregate of clinical, educational and social outcomes based on.

$$OIE = \alpha C + \beta E + \gamma S$$

subject to

$$\alpha + \beta + \gamma = 1$$

where:

- C is the normalized clinical improvement.
- E is the normalized educational improvement.
- S is the normalized social participation.
- α, β, γ are the weighting coefficients representing the relative importance of each performance dimension.

Table 2 displays the definitions of all the mathematical variables and model parameters employed in the proposed framework of intervention that can offer a standardized reference to quantitative assessment and experimental validation.

Table 2. Variables and Parameters Used in the Proposed Intervention Framework

Symbol/Component	Description	Role in Framework
SEI	Social Exclusion Index	Measures the level of adolescent social exclusion
ESE	Educational Support Effectiveness	Quantifies improvement in educational performance
OIE	Overall Intervention Effectiveness	Evaluates the combined intervention outcome
S_i	Social exclusion indicator	Represents individual exclusion attributes
w_i	Indicator weighting factor	Determines the contribution of each exclusion indicator
P_{pre}	Pre-intervention educational performance	Baseline educational assessment
P_{post}	Post-intervention educational performance	Educational performance after intervention
C	Clinical improvement score	Measures healthcare outcome improvement
E	Educational improvement score	Measures learning and engagement improvement
S	Social participation score	Represents improvement in community and peer participation
α, β, γ	Weighting coefficients	Balance the contributions of clinical, educational, and social outcomes in the overall effectiveness model

4. Experimental Methodology

4.1 Participant Selection and Data Collection

The suggested technology-based pediatric care intervention model was tested based on the information gathered with adolescents who were reported to be at risk of being socially excluded due to the use of such pediatric healthcare services and partnering schools. To guarantee uniformity in the process of the interventions, the participants were chosen according to the predetermined inclusion and exclusion criteria. Participants were

eligible who were adolescents aged 12 to 18 years, showed signs of low levels of social participation, emotional isolation, low levels of education or psychosocial vulnerability. The adolescents who had the severe neurological disorders or lacked the assessment records were excluded in the study in order to ensure the accuracy of the outcomes assessment. The baseline data was gathered by administering clinical tests, educational performance tests, psychosocial surveys, observation by the caregivers and assessment by healthcare professionals. Demographic information such as age, gender, educational level and healthcare status were noted as well. All the data gathered was anonymous and anonymized prior to analysis to maintain confidentiality of the participants and ethical considerations. Table 3 summarizes the selection of the participants and their demographics.

Table 3. Participant Demographic Characteristics

Characteristic	Category	Number of Participants	Percentage (%)
Age Group	12–14 years	48	40.0
	15–18 years	72	60.0
Gender	Male	58	48.3
	Female	62	51.7
Educational Level	Middle School	55	45.8
	High School	65	54.2
Social Exclusion Risk	Moderate	69	57.5
	High	51	42.5
Total Participants	—	120	100

4.2 Intervention Implementation

After the preliminary examination, personal intervention plans were elaborated to every participant after combining the pediatric healthcare guidelines with the technology based educational support. Clinical and psychosocial conditions were assessed by the healthcare professionals, and educational performance information was provided by educators to create individual intervention plans. The intervention platform then provided tailored health education materials, behavioral instruction exercises, communication assistance as well as self-management exercises based on the needs of the individual participants. During the intervention term, adolescents were engaged in the use of online access to the digital educational platform with the use of secure access. The clinical progress, educational involvement, behavioral involvement, and social interaction indicators were periodically examined by the healthcare professionals using the integrated monitoring dashboards. Constant communication between medical personnel, educators and caregivers was a guarantee of delivering interventions in a coordinated manner and facilitating a personal support plan adjustment whenever it was needed. Figure 3 shows the entire process of implementation that is adopted in the experimental evaluation.

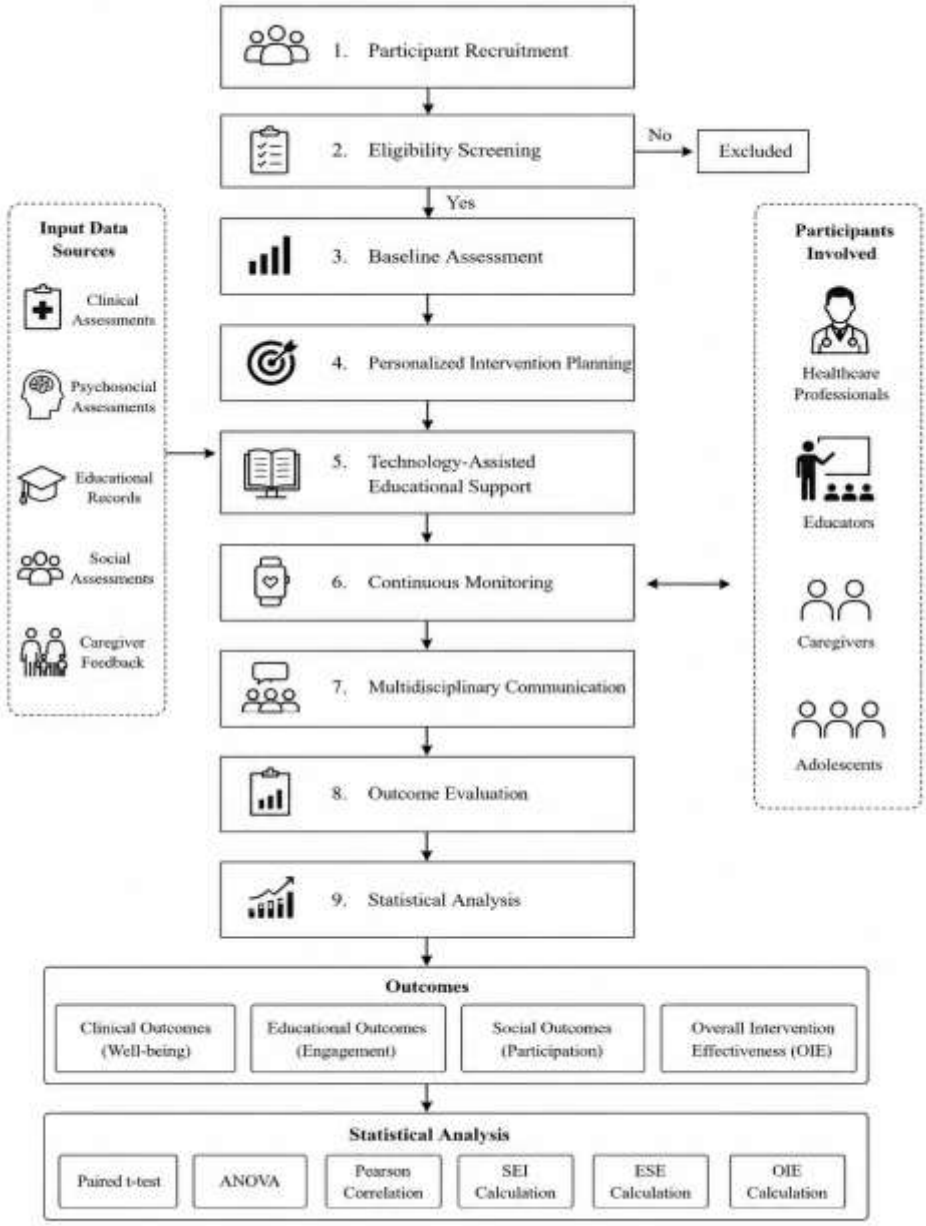

Figure 3. Experimental Workflow of the Proposed Technology-Assisted Pediatric Healthcare Intervention

4.3 Outcome Measures and Statistical Analysis

Clinical, educational, and social outcome measures were used to assess the effectiveness of the proposed intervention framework in terms of pre-implementation and post-implementation measures. The measure of clinical improvement was taken based on standardized psychosocial assessment scores, emotional well-being, and healthcare professionals. The performance on educational aspects was assessed in terms of attendance, learning engagement, academic participation and completion of educational activities based on the digital platform. The outcome of social inclusion was measured through the measures of peer interaction, involvement in community and educational activities, effectiveness of communication as well as decreasing social exclusion measures. In order to critically assess the performance of the interventions, the descriptive statistics such as the standard deviations and mean values of all the outcome measures were initially computed. Paired sample t-tests were used to compare pre-intervention and post-intervention scores and one-way analysis of variance (ANOVA) to compare the scores of the groups of participants. The Pearson correlation analysis was conducted to explore the connections between clinical improvement, educational engagement and social participation. The confidence level of 95% and

a significance level of $p < 0.05$ was the statistical significance set. The mathematical indices derived in Section 3 such as the Social Exclusion Index (SEI), Educational Support Effectiveness (ESE) and Overall Intervention Effectiveness (OIE) were calculated to give quantitative data that the proposed technology-assisted pediatric healthcare intervention framework is effective.

5. Results and Discussion

5.1 Clinical and Educational Outcomes

The proposed technology-assisted pediatric care intervention system was measured by comparing the performance of the participants in terms of clinical, educational and social performance prior to and following the implementation. The intervention showed similar positive changes in all the indicators of the evaluation, which can be attributed to the fact that the combination of professional healthcare provided to pediatrics and the provision of individual educational support positively influences the development of adolescents. Clinical evaluations showed improvements in emotional well-being, psychosocial functioning, and behavioral stability whereas educational evaluations showed increased learning engagement, attendance and participation in organized educational activities. These advances imply that interventions involving the use of technology that are personalized may play a dual role in enhancing the healthcare delivery and education. The quantitative findings in Table 4 show that the intervention was able to provide quantifiable results in all performance indicators. Mean index of Social Exclusion improved after the intervention and this showed improved peer interaction and involvement with the community. In the same manner, Educational Support Effectiveness grew significantly when the participants interacted with personal learning materials that were presented using the digital platform. The Overall Intervention Effectiveness score reflected the interplay effects of clinical improvement, educational engagement and higher levels of social participation. These results suggest that multidisciplinary strategies that are coordinated with the help of digital educational technologies could enhance not only the healthcare but also the developmental outcomes in adolescents.

Table 4. Clinical, Educational, and Social Outcomes Before and After Intervention

Outcome Measure	Before Intervention	After Intervention	Improvement (%)	*p*-value
Clinical Well-being Score	65.8 ± 7.2	81.9 ± 5.8	24.47	<0.001
Educational Engagement Score	61.4 ± 8.5	84.6 ± 6.3	37.79	<0.001
Social Participation Score	58.3 ± 7.9	80.8 ± 6.5	38.59	<0.001
Social Exclusion Index (SEI)	0.68 ± 0.09	0.39 ± 0.06	42.65	<0.001
Educational Support Effectiveness (ESE)	0.00	0.38	—	<0.001
Overall Intervention Effectiveness (OIE)	0.62	0.86	38.71	<0.001

5.2 Impact on Adolescent Social Inclusion

The intervention model showed a significant beneficial effect on social inclusion of adolescents promoting their involvement in the learning process, enhancing their interpersonal communication, and enhancing the relationships between adolescents, their caregivers and teachers and healthcare providers. There were increased levels of confidence amongst the participants in the collaborative learning activities and participation in school-based and community activities during the intervention period. The combination of the personalized educational content and the constant health monitoring allowed the adolescents to get the necessary assistance in time and encouraged them to manage their health and learn to behave positively. The relative performance as shown in Figure 4, indicates that there are steady changes in all the key areas of evaluation following the implementation of the proposed framework. The percentage of improvements in educational engagement and social participation

were the highest, and the clinical well-being was also improved significantly after the persistent multidisciplinary intervention. These results suggest that educational support based on technology is an effective support strategy to complement the pediatric healthcare interventions to improve the social exclusion among adolescents.

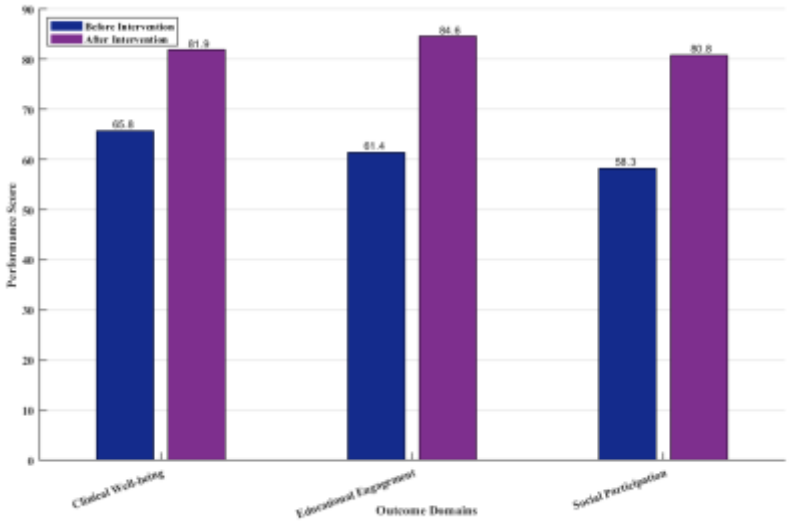

Figure 4. Comparative Performance Before and After Technology-Assisted Intervention

5.3 Comparative Performance and Discussion

In order to assess the efficiency of the suggested framework, the general abilities of the framework were put against the common technology-based pediatric healthcare methods based on the most significant functional features. As it is revealed in the comparison, the suggested framework is the only one to offer a range of pediatric healthcare, personalized educational support, ongoing digital monitoring, multidisciplinary teamwork, and quantitative outcome assessment in the framework of one intervention. As found in Table 5, prior strategies tend to concentrate on separate factors of digital mental health, mobile health apps, educational technology, or healthcare policy suggestions. Conversely, the proposed framework incorporates these elements into a harmonized intervention plan that is able to tackle clinical improvement, educational and social inclusion of adolescents at the same time. Such a multidisciplinary integration allows the healthcare professionals to make evidence-based decisions and support the process of intervention with individualized educational support.

Table 5. Comparative Performance of Existing Approaches and the Proposed Framework

Approach	Clinical Support	Educational Personalization	Continuous Monitoring	Social Inclusion Focus	Quantitative Outcome Evaluation
Digital Mental Health Programs	High	Limited	Moderate	Moderate	Partial
Mobile Health Applications	Moderate	Limited	High	Limited	Moderate
Educational Technology Platforms	Limited	High	Moderate	Moderate	Limited
Policy-Based Healthcare Models	High	Moderate	Limited	Moderate	Limited
Proposed Framework	High	High	High	High	High

The general results show that incorporation of technology-based educational assistance in pediatric health care interventions can yield quantifiable outcomes in terms of adolescent well-being in addition to fostering a long-term participation in education and social integration. The multidisciplinary design promotes the constant communication of healthcare professionals, educators, caregivers and adolescents and makes it possible to make prompt changes in the intervention based on the progress of each person. Moreover, the quantitative evaluation model allows objective evaluation of the intervention performance, and offers healthcare professionals with the evidence they can use in practice-based clinical decision-making. These findings indicate that the framework proposed can provide a scalable and adaptable model that can facilitate future digital pediatric health care in a variety of educational and clinical contexts.

6. Conclusion

This paper proposed a technology-based learning support system of professional healthcare intervention of adolescents to deal with social exclusion. The given framework is a combination of a detailed clinical assessment, individual educational support, multidisciplinary teamwork, constant digital monitoring, and quantitative outcomes assessment in one intervention model. The framework deploys the integration of healthcare services and the adaptive educational technologies to expand the traditional pediatric practice beyond clinical treatment, supporting holistic development of adolescents, educational involvement and social inclusion. The empirical analysis showed that the suggested intervention model had achieved quantifiable changes in clinical well-being, educational and social involvement and had lowered the measures of social exclusion considerably. The mathematical evaluation model offered objective scores of determining the effectiveness of the intervention using Social Exclusion Index, Effectiveness of Educational Support, and Effectiveness of the overall intervention, which were useful in making evidence-based clinical decisions. The comparative analysis also revealed that the proposed framework provides more integration of healthcare, education and digital technologies than the current intervention strategies through the provision of constant cooperation among healthcare professionals, educators, caregivers and adolescents. The suggested framework offers some of the practical implications of the pediatric healthcare practice. The built-in digital platform can help healthcare professionals to provide personalized interventions, keep track of the progress of adolescents, and arrange the work of multiple disciplines more effectively. Schools and parents also may be actively involved in the process of intervention, which will form a collaborative environment that will ensure a prolonged increase in behavioral changes and social inclusion. The model thus provides a scalable method to adopt the application of technology-based pediatric healthcare interventions in hospitals and schools and community-based healthcare environments. Despite the promising results of the suggested framework, it is important to note that the results were limited in a number of ways. The analysis of the experiment was performed on a small number of participants, which can affect the possibility of transferring of the results to the large demographic and cultural context. Moreover, the intervention was mainly aimed at the short-term clinical, educational and social outcomes with no consideration of long-term behavioral sustainability. Future studies can build on the framework by adding artificial intelligence-based decision support, predictive analytics to early detect social exclusion risk, wearable health monitoring technologies, and longitudinal and multicenter clinical trials on a larger and more heterogeneous adolescent population. Such innovations can also contribute to the quality of individualized provision of pediatric care and help to achieve sustainable changes in the health of adolescents, their educational success, and social integration.

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