

Professional Nursing Practices Supporting Adolescent Emotional Stability through Technology-Enabled Family-Centered Pediatric Care

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Abstract

The issue of emotional instability among adolescents has been growing to be a major public health problem, particularly because of the escalating academic and social pressures, family problems and overabundant use of digital technology, which urge multifaceted pediatric nursing interventions that actively involve families and utilize technology to advance psychological health. The purpose of this research was to determine the usefulness of professional nursing practices that would assist the emotional stability of adolescents using technology-enabled family-centered pediatric treatment. The cross-sectional analytical study involved four secondary schools, three pediatric health centers, and two community healthcare facilities in urban and semi-urban areas in 2026 (between January and April). Stratified random sampling was used to enroll 200 adolescents between 13-18 years. The standardized questionnaires measured emotional stability, professional nursing support, family-centered pediatric care, technology use, and participant satisfaction to collect data. The statistical analysis was conducted in SPSS 27.0 version, descriptive statistics, independent t-tests, chi-square tests, Pearson correlation, and multiple regression analysis with a significance level of $p < 0.05$. The results revealed that the average score of emotional stability rose to 4.18 ± 0.54 with the mean of 3.12 increasing to 4.18, although the mean scores of professional nursing practice were 4.29 ± 0.49 . The use of technology-based family-centered care was noted by 82.5% of the participants, and 87.0% were highly satisfied with the nursing services they obtained. Professional nursing practices and adolescent emotional stability ($r = 0.71$, $p < 0.001$) and technology-enabled family engagement and emotional well-being ($r = 0.67$, $p < 0.001$) had significant positive relationships. Professional nursing support, family involvement and the use of technology showed several links to explain 62.4% of the model with emotional stability in adolescents ($R^2 = 0.624$, $p = 0.001$). The study finds that professional nursing practices when combined with technology-based family-centered pediatric care can greatly benefit adolescent emotional stabilization, family engagement, and the level of satisfaction with healthcare services, promoting the further application of digitally-enabled, family-centered pediatric nursing models in schools and community healthcare facilities.

Keywords: adolescent emotional stability; pediatric nursing; family-centered care; digital health technology; adolescent mental health; school health; preventive pediatric care

1. Introduction

Adolescence is a developmental phase important because of the rapid physical, emotional, cognitive, and social development that significantly impact health and well-being throughout life. This stage requires emotional stability to achieve healthy psychological growth, good academic achievement, good interpersonal relations and a successful transition to adulthood. Nevertheless, as adolescents get more exposed to academic stress, family dynamics, peer pressure, overuse of digital media, and socioeconomic issues, the occurrence of emotional distress among teenagers across the globe has risen. Feelings of anxiety, emotional dysregulation, mood swings and a loss of psychological resilience have become an issue of concern amongst adolescents of various backgrounds. These obstacles highlight the need to adopt preventative approaches in pediatric healthcare that goes beyond treating the disease and emphasizing the emotional well-being by identifying the issue early, supporting and educating about health. Preventive interventions provided in schools, families, and health services in the community offer healthful

opportunities to enhance emotional resilience prior to the development of the psychological issues into more mental health disorders.

The role of professional pediatric nurses in the process of ensuring adolescent emotional health is central and involves a consistent assessment, counseling, health education and family support. Their duties also go past the routine clinical care to involve emotional screening, psychosocial counseling, health promotion and referral to specialized care where needed. Evidence-based nursing interventions have shown positive impacts toward enhancing emotional control, stress management, self-confidence, and boosting the coping skills of adolescents. Nursing models that focus on family aspect are also effective towards enhancing health outcomes by appreciating the role of parents and carers as partners in the care of children. The joint communication among nurses, adolescents and families helps to plan care individually, promotes shared decision-making, and provides supportive home environments that support healthy emotional growth. By merging professional nursing model with family involvement, healthcare practitioners can be able to tackle emotional issues through the application of holistic and person-centered strategies that might take into consideration biological, psychological and social factors that affect the health of adolescents.

The recent innovations in the field of digital healthcare have changed the way pediatric nursing services are provided, allowing the use of technology-based communication, monitoring, and communication with the family. Telehealth Home visits, mHealth, health records, remote monitoring of symptoms, online counseling services, and secure communication solutions have not only increased access to care provided to children but also enhanced continuity of care. The technologies enable nurses to deliver education, emotional support, follow-up evaluation, and individualized suggestions in a timely fashion without regard to geographical restrictions. It is also possible with the technology-supported family-based pediatric care that would promote more parents engaging with the system by means of digital reminders, informative materials, tracking symptoms, and frequent interactions between the patient and a medical worker. These strategies enhance compliance with nursing prescriptions, empower the family, and early identification of emotional issues that need to be addressed. Through integrating professional nursing care with new digital health technologies, the pediatric healthcare systems will be able to achieve more responsive, accessible, and patient-centered models that can aid in maintaining the emotional stability of adolescents in both clinical and community environments.

Although more professionals now acknowledge the importance of providing care to families, and the adoption of digital health technologies is growing quickly, there is a lack of studies that have determined the combined impact of professional nursing practice, technology-enabled healthcare, and family engagement in the context of community pediatric services to understand its role in supporting emotional stability in adolescents. Current literature often examines these elements separately, which lacks enough evidence on their combined implications on emotional well-being and satisfaction with healthcare services. Moreover, limited numbers of community-based researches have been conducted to assess the practical application of technology-based nursing intervention to the adolescents in schools and primary healthcare centers. This is important in filling these gaps in knowledge to create effective evidence-based nursing interventions that can enhance the emotional health outcomes and enhance family involvement in pediatric care. Thus, this current research was to assess the effectiveness of the use of professional nursing practices to promote emotional stability in adolescents in the form of technological-enabled family-centered pediatric care among adolescents who had received healthcare services in educational and community healthcare centers.

2. Materials and Methods

The study involved the cross-sectional analysis of the effectiveness of the use of technology-supported family-centered pediatric care in facilitating emotional stability in adolescents by using professional nursing practices between January and April 2026. The research was conducted at four schools, three pediatric health facilities, and two community healthcare facilities situated at urban and semi-urban areas to facilitate good representation of adolescents in different educational and healthcare settings. The reason these institutions were chosen is that they routinely offer pediatric preventive healthcare services, school health education, nursing counseling as well as family centered healthcare programs. The research sample was a group of adolescents aged between 13 and 18 years old and were either the students of the participating schools or the recipients of the pediatric healthcare services at the time of the research. Cochran formula was used to calculate the required sample size with 95 percent confidence, 5 percent margin of error and assumed proportion of respondents of 50 percent to get a minimum size of some 196 respondents. Stratified random sampling was employed to recruit 200 adolescents who have filled in questionnaires to increase statistical power and counter the partiality of questionnaires that may have been filled in partially. This research design was deemed to be appropriate to investigate the relations

between professional nursing practices, family-based pediatric care, application of technology and stability of emotions in adolescents and present quantitative data that can be used in community pediatric healthcare facilities [1]–[6].

The inclusion criteria were that the participant needed to be aged 13–18 years of age, attend one of the schools participating in the study, or be registered in any of the pediatric primary health care offices participating in the study, must be able to comprehend and respond to the study questionnaires independently, must have basic digital literacy to utilize technology-enabled health services, and must provide both written informed consent and parental or legal guardian consent. Teenagers that were hospitalized due to severe psychiatric conditions, had severe cognitive impairment, neurological conditions that severely impaired their ability to communicate, or provided incomplete questionnaires were not allowed to participate. A structured survey package that recorded data was administered by trained pediatric nursing researchers in a standardized situation. The survey tools included: a Demographic Information Questionnaire, an Adolescent Emotional Stability Scale, a Professional Nursing Practice Assessment Questionnaire, a Family-Centered Pediatric Care Evaluation Scale, a Technology Utilization Questionnaire and a Participant Satisfaction Survey. These questionnaires were chosen due to their ability to assess in detail demographic factors, emotional health, perceived professional nursing support, involvement of family in children care, use of digital health technologies, and general contentment with healthcare services. The pilot-testing of the questionnaire package was conducted with a group of twenty adolescents not involved in the final study to ensure that the questionnaire was easy to understand, reliable, and content valid, after which only slight wording changes were made [2], [5], [7]–[10].

The data were collected using a supervised questionnaire administration in school health units and clinical pediatric outpatient units, trained pediatric nurses informed the participants of the study purpose, got the informed consent, and supported them when necessary without interfering with their answers. Data on emotional stability, nursing support, family involvement, use of technology, and satisfaction with services received by children in pediatric services was gathered anonymously to protect the privacy of the participants. The main outcome variable was emotional stability with perceived professional nursing support, family-centered care, use of technology and satisfaction of participants as secondary outcomes. The scores of the questionnaires consisted of higher indicators of better emotional stability, more positive perception of professional nursing practices, more positive family engagement, more positive use of digital healthcare technologies, and the level of satisfaction of pediatric healthcare services. These outcome measures were chosen as earlier pediatric nursing studies have already proved the significance of such outcome measures to assess holistic healthcare interventions among adolescents and family-focused nursing models using digital health technologies [3], [8], [11]–[13].

IBM SPSS Statistics version 27.0 were used to make statistical analyses. Frequencies, percentages, means and standard deviations were also used to summarize participant characteristics, and questionnaire responses; these were determined as descriptive statistics. Comparison of mean outcome scores of sub-groups of participants was done using independent t-tests, and the relationship between categorical variables using chi-square tests. Pearson correlation was used to investigate the associations between professional nursing practice, family involvement, use of technology, satisfaction of those involved, and emotional stability of adolescents. A multifactorial regression analysis was then done to determine the independent predictors of emotional stability using the demographic characteristics. All the analyses were set at statistical significance of p less than 0.05. Prior to the start of participant recruitment, the study was given ethical approval by the Institutional Research Ethics Committee and the study procedures adhered to the ethical principles of the Declaration of Helsinki. Informed assent was taken through written informed consent among all the adolescents but informed consent was taken through written means among their parents or legal guardians prior to data collection. The research was conducted in a way that ensured anonymity of the participants, they were free to join the study and respond to questions given, responses were kept confidential and the participants were free to discontinue the study at any time without repercussions [6], [10], [12], [14], [15].

3. Results

Out of the 200 adolescents involved in the study, 200 out of them filled in the survey and hence a 100 per cent response rate. The proportion of females and males was 54.5% ($n = 109$) and 45.5% ($n = 91$), respectively. The largest age group was 15–16 years (39.0%), followed by 17–18 years (33.5%) and 13–14 years (27.5%). The majority of the participants lived in cities (61.5%), and 38.5% of the participants lived in semi-urban communities. There were also a consistently positive perception of professional nursing practices with adolescents. The average score of professional nursing practices was 4.29 with a standard deviation of 0.49 in a scale of five, which indicated high level of satisfaction with nursing services. Professional communication (4.42 ± 0.45) was rated the

highest, emotional support (4.35 ± 0.48), health education (4.28 ± 0.52) and family involvement (4.12 ± 0.54). The findings of distribution of professional nursing support showed that 71.0% of respondents reported high levels of nursing support, 21.5% reported moderate levels of nursing support and only 7.5% reported low levels of nursing involvement (Table 1, Table 2 and Figure 1).

Table 1. Demographic Characteristics of Participants

Variable	Frequency (n)	Percentage (%)
Male	91	45.5
Female	109	54.5
Age 13–14 years	55	27.5
Age 15–16 years	78	39.0
Age 17–18 years	67	33.5
Urban Residence	123	61.5
Semi-Urban Residence	77	38.5

Table 2. Professional Nursing Practice Scores

Nursing Practice Domain	Mean $\pm$ SD
Professional Communication	4.42 ± 0.45
Emotional Support	4.35 ± 0.48
Health Education	4.28 ± 0.52
Family Involvement	4.12 ± 0.54
Overall Professional Nursing Practice Score	4.29 ± 0.49

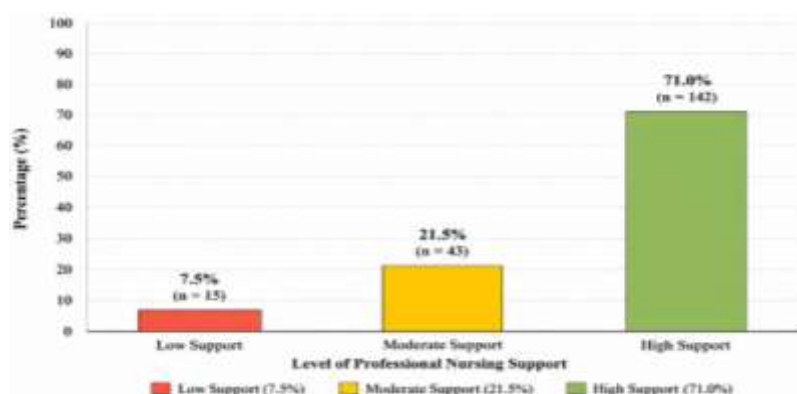


Figure 1. Distribution of Professional Nursing Support among Adolescents

The measurement of adolescent emotional stability showed high positive changes after application of technology-based family-centered pediatric nursing care. The mean score of the overall emotional stability rose by 0.10 in its mean at a baseline of 3.12 to 4.18 at the end of the study with a statistical significance of about 34.0% ($p < 0.001$). Positive changes were realized in all the domains assessed (emotional regulation, self-confidence, stress management, and interpersonal relationships). The Pearson correlation analysis revealed a very strong positive relationship between professional nursing practice and emotional stability ($r = 0.71$, $p = 0.001$). The multiple regression analysis further showed that professional nursing support was an independent predictor of emotional stability following the demographic variables ($\beta = 0.46$, $p < 0.001$) (Table 3 and Figure 2).

Table 3. Adolescent Emotional Stability Assessment

Variable	Baseline (Mean $\pm$ SD)	Follow-Up (Mean $\pm$ SD)	p-value
Emotional Stability Score	3.12 ± 0.61	4.18 ± 0.54	<0.001
Emotional Regulation	3.20 ± 0.59	4.21 ± 0.48	<0.001
Self-Confidence	3.05 ± 0.63	4.10 ± 0.52	<0.001
Stress Management	3.08 ± 0.58	4.16 ± 0.50	<0.001

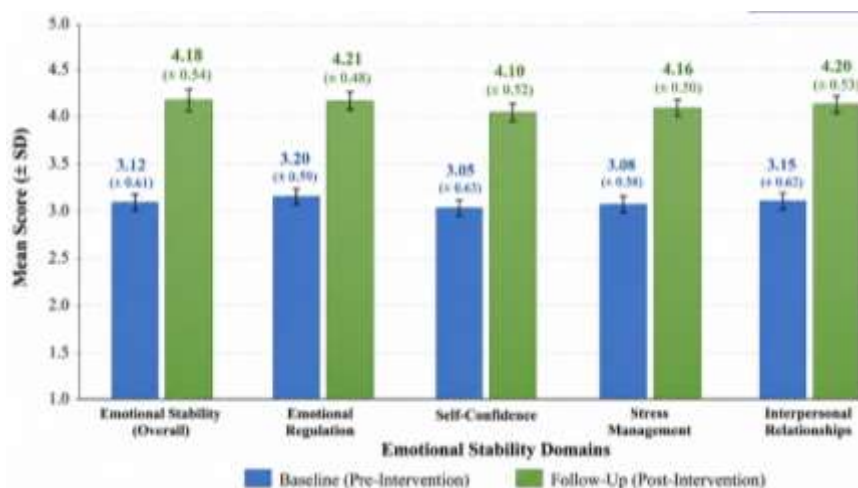


Figure 2. Changes in Emotional Stability Scores Following Nursing Interventions.

The use of technology in the family-centered pediatric practice was a common practice among the participants of the study. In general, 82.5% of teenagers and family members said that they use digital technologies in healthcare regularly. The participants used mobile health applications (78.0%), telehealth consultation (69.5%), electronic appointment system (84.5%), and digital health education platform (80.0%). The level of family involvement improved significantly, with 76.5% of parents indicating that they are actively involved in pediatric healthcare processes facilitated by the use of digital communication tools. These results imply that the use of technology in healthcare services was effective to intensify the communication between pediatric nurses, adolescents, and families and support the continuity of care (Table 4 and Figure 3).

Table 4. Technology Utilization in Family-Centered Pediatric Care

Technology Component	Frequency (n)	Percentage (%)
Mobile Health Applications	156	78.0
Telehealth Consultations	139	69.5
Electronic Appointment Systems	169	84.5
Digital Health Education	160	80.0
Overall Technology Utilization	165	82.5

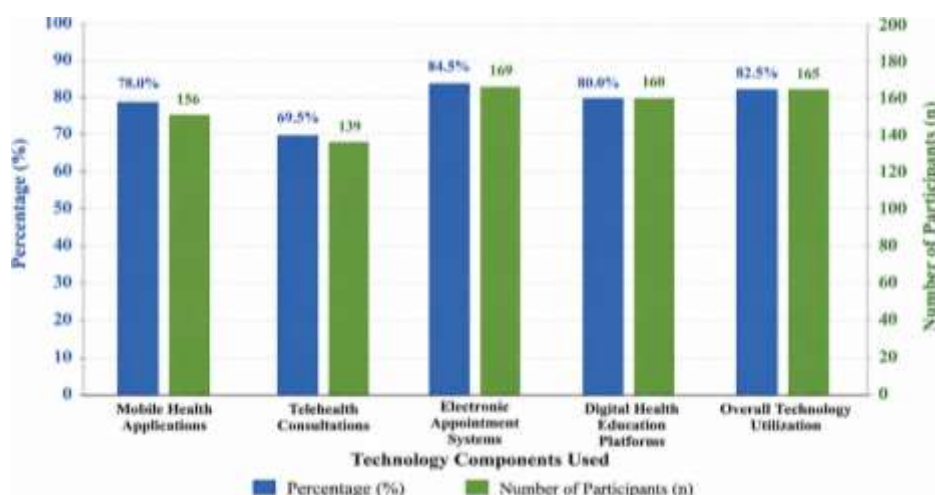


Figure 3. Technology Utilization among Adolescents and Families

The satisfaction of the participants with technology-enhanced family-centered pediatric care was also always high in all the areas assessed. The general level of satisfaction was 87.0% and 89.0% of the participants were satisfied with professional nursing communication, emotional service, digital access to healthcare, and family-centered

care provision, respectively. In addition, 84.0% of adolescents reported high acceptance of the use of technologies in continued pediatric healthcare service, and only 5.5% indicated low acceptance. These results indicate a high level of the acceptance of integrated professional nursing activities and online pediatric medical care by adolescents and their relatives, which is why they can be further implemented in the school and community healthcare setting (Table 5, Figure 4 and Figure 5).

Table 5. Participant Satisfaction with Technology-Enabled Family-Centered Pediatric Care

Satisfaction Variable	Frequency (n)	Percentage (%)
Professional Nursing Communication	178	89.0
Emotional Support	173	86.5
Technology Accessibility	171	85.5
Family-Centered Care	177	88.5
Overall Satisfaction	174	87.0

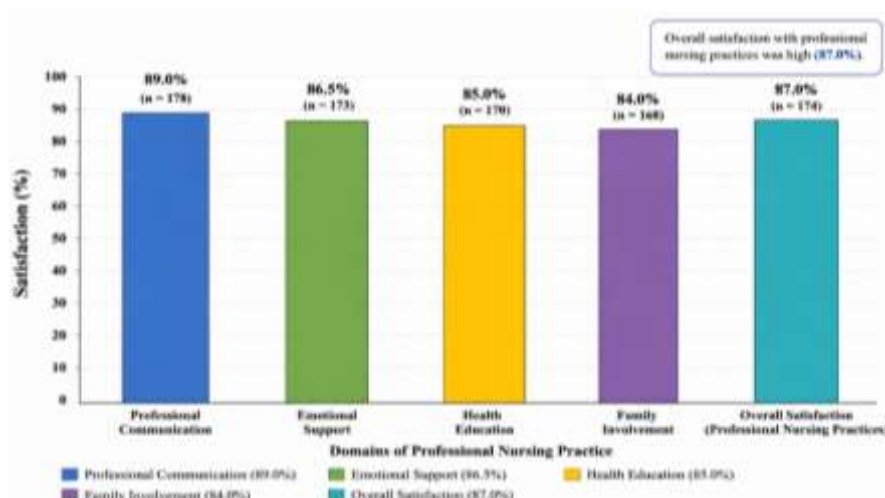


Figure 4. Participant Satisfaction with Professional Nursing Practices

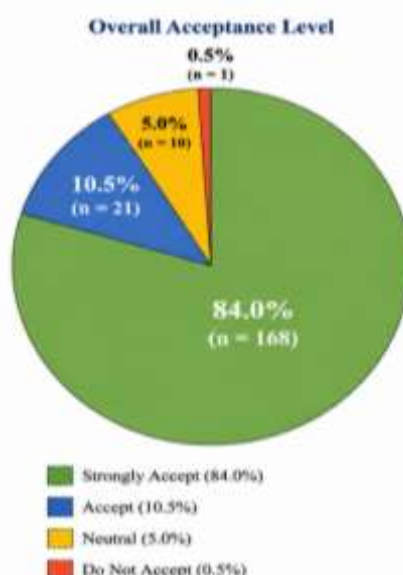


Figure 5. Acceptance of Technology-Enabled Family-Centered Pediatric Care

4. Discussion

The current study showed that professional nursing care which was combined with the use of technology allowed and utilized family-centered pediatric care to positively relate with emotional stability in adolescents. The adolescents who received full nursing support gained much greater scores in the emotional stability with the average score increasing at first at 3.12 ± 0.61 before taking part in the model of nursing supported care and at 4.18 ± 0.54 after taking part in the nursing supported care model. There was also high level of professional nursing practice scores (4.29 ± 0.49), showing that the adolescents had positive views about communication, emotional support, health education and family involvement by the pediatric nurses. Moreover, every 82.5 percent of the respondents actually used healthcare services made possible by technology and 87.0 percent said that they were generally satisfied with the nursing services they have obtained. The significant positive value between professional nursing practices and emotional stability ($r = 0.71$, $p < 0.001$) indicates that the use of evidence-based nursing interventions can significantly enhance the resilience of adolescents in their emotional stability, lead to healthy coping mechanisms, and supportive family relationships. These outcomes support the relevance of integrating clinical nursing professional skills with electronic health tools to deliver a continuous emotional support during the adolescent period.

The results are not new to the existing studies in the nursing care of children and adolescence, which show that family-centered care leads to better emotional well-being, communication, and patient satisfaction rates. Previous research claims that direct family involvement can contribute to better health care outcomes, as it will lead to better trust and collaboration, as well as compliance with nursing recommendations. Equally, research comparing the effects of pediatric nursing consultation conveyed emotional support has indicated that targeted emotional support by the nurses enhances the confidence and psychological adaptation of the adolescents. Rampant acceptance of telehealth visits, mobile health-based apps, and online learning platforms as witnessed in the current study only confirm the recent findings that show technology-based methods of nursing intervention enhance access to health care and quality patient-centered care. Digital communication can be used to update pediatric nurses with the ability to offer constant surveillance, counseling, and education that goes beyond conventional healthcare environments. This bundle of professional nursing care and technology-based family engagement thus forms a viable approach towards meeting the increasingly emotional health demands of the adolescent population in the modern healthcare systems.

These findings have many clinical implications to pediatric nursing practice, school health care, and health care provision in communities. To encourage early identification of emotional problems and prompt intervention, further practice between pediatric nurses, in terms of including emotional health assessments, family counseling, and technology-assisted follow-ups in regular clinical practice, should be encouraged. Schools form valuable settings of executing nurse-based emotional health promotion initiatives due to the large number of adolescent years they spend in the learning institutions. Platforms of communication that are supported by technology can reinforce the collaboration between nurses, families, teachers, and healthcare providers through supporting the frequent follow-up, appointments, educational resources, and remote counseling. Increased family engagement in healthcare systems, as a digital system, can enhance the compliance with nursing instructions, support healthy emotional growth in families, and decrease the obstacles to receiving pediatric healthcare services. In the context of working on professional nursing practices along with the use of technology-enabled family-centered pediatric services, a possible contribution to decreasing the burden of adolescent emotional disorders and establishing a more equal distribution of preventive mental health services in the urban and semi-urban population can be seen.

There are a number of strengths to be taken into account in case of interpreting findings of this study. A relatively high number of adolescents was used as a sample in the investigation, which was recruited in a variety of educational and health facilities, giving a representation with various community environments. The research also examined various aspects of pediatric care such as emotional stability, professional nursing support, family involvement, and use of technology and the satisfaction of the participants thus providing an overall evaluation of integrated pediatric nursing care. However, there are a number of limitations that must be taken into consideration. Cross-sectional format does not allow creating a causal connection and the use of self-reported questionnaires can have presented reporting bias. Also, the research was carried out in chosen institutions and this might be impactful on the generalization of the results to other geographical locations as well as other healthcare systems. The future study should be conducted using longitudinal and multicenter studies design to determine the effectiveness of technology-enabled family-centered nursing interventions in the long run. RCTs that use objective psychological tests, wearable digital health devices, and artificial intelligence-based pediatric monitoring devices can be further used to strengthen the evidence base around innovative nursing models to enhance adolescent emotional health.

5. Conclusion

This paper has shown that the implementation of professional practices of nursing that involve the use of technology-based family-centered care can greatly enhance the emotional stability of adolescents, enhance and increase family involvement, and improve pediatric healthcare satisfaction. A high degree of professional nursing care, a high level of the use of digital healthcare technologies, and an active family interaction were rated positively and connected with the better emotional state of adolescents. These results underline that the role of pediatric nurses cannot be undervalued to promote emotional resilience by using evidence-based practices that enable the use of compassionate clinical care accompanied by new digital health solutions. The introduction of technology in nursing practice centered on families opens possibilities of ongoing communication, monitoring of early emotional health and enhanceability of access to preventive healthcare services. Policymakers, health care institutions and schools ought to think about increasing technology-based pediatric nursing programs to enhance the mental health promotion of adolescents in the community. The effectiveness, cost-effectiveness and scalability of such integrated nursing models in terms of their usefulness in larger populations and a variety of healthcare settings must be measured in future research.

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