

Correlation Between Internet Addiction and Assertiveness in Physiotherapy Students

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Abstract

Introduction: Internet use has accelerated dramatically over the last two decades and has become central to how young people study, socialize and entertain themselves. In particular, students in higher education who depend on online resources for academic materials, peer interaction, and professional networking have integrated internet use into nearly every dimension of daily life. With increasing time spent online, concern has grown about patterns of excessive use that produce impairment in daily functioning, a phenomenon frequently referred to as Internet Addiction.

Aim: To examine the correlation between Internet Addiction (IAT) and assertiveness in physiotherapy students.

Result: Pearson correlation coefficients were calculated to explore relationships between Internet Addiction scores, Assertiveness scores, and Age. Statistical significance was accepted at $p < 0.05$.

Conclusion: The present study found a strong positive correlation between Internet Addiction and Assertiveness among physiotherapy students, indicating that increased internet use was associated with higher assertiveness scores. This suggests that, in an academic and professional context, the internet may serve as a tool for learning and confidence-building rather than only as a source of distraction or dependence.

Keywords: Internet Addiction, Assertiveness, Physiotherapy Students, Internet addiction test, Communication skill

1. Introduction

Internet use has accelerated dramatically over the last two decades and has become central to how young people study, socialize and entertain themselves. In particular, students in higher education who depend on online resources for academic materials, peer interaction, and professional networking have integrated internet use into nearly every dimension of daily life. With increasing time spent online, concern has grown about patterns of excessive use that produce impairment in daily functioning, a phenomenon frequently referred to as Internet Addiction (IA), problematic internet use or compulsive online behavior. Although IA is not uniformly codified across diagnostic manuals, validated instruments such as the Internet Addiction Test (IAT) provide a standardized way to estimate problematic use in epidemiological samples. The IAT, developed by Dr. Kimberly S. Young, is a 20-item questionnaire scored 0–5 per item

(total 0–100), with conventional cutoffs: 0–30 = Normal; 31–49 = Mild; 50–79 = Moderate; and 80–100 = Severe dependence. Applying such standardized measures allows comparison across studies and informs local prevalence estimates. Beyond prevalence, it is especially important to evaluate how excessive internet use is associated with social and communication skills that are essential for effective clinical practice. Assertiveness defined as the ability to express one’s opinions, needs and feelings in a direct, honest and appropriate manner is a core interpersonal competency for physiotherapy students and clinicians. Assertiveness facilitates patient education, clear task delegation, adherence to treatment plans, and cooperative inter professional working relationships. International studies indicate that problematic internet use often correlates with reduced social competence, impaired communication, and increased psychological distress. For example, community and school-based surveys have documented associations between higher IAT scores and lower social skills inventory scores; these studies underscore the possibility that excessive online engagement may displace real-world social practice and attenuate opportunities to develop or exercise assertive behaviors. The Medwave cross-sectional study of adolescents in Lima demonstrated a notable association between problematic internet use and lower communication-related social skills, while also highlighting gender differences in prevalence methodological insights we adopt in the present work. In the context of physiotherapy education, where communication and assertiveness directly influence patient outcomes and team functioning, even mild decrements in assertiveness may carry practical consequences. Therefore, this study focuses on physiotherapy students to quantify the prevalence of varying degrees of problematic internet use, to describe the distribution of assertiveness scores, and to examine the statistical relationship between internet addiction and assertiveness using transparent and reproducible methods. The findings aim to inform curricular and counseling strategies to promote healthy internet habits and to strengthen interpersonal competencies among future physiotherapists

2. Need for study

The need for this study arises from the increasing prevalence of internet use among students and the associated risk of developing problematic usage patterns that may impair real-world functioning, social interaction, and academic performance. Assertiveness and communication skills are central to physiotherapy practice, as they play a crucial role in effective patient care, education, and teamwork. However, excessive engagement in online activities may lead to reduced opportunities for face-to-face interaction, which could negatively affect assertiveness and interpersonal competence. Despite the widespread use of digital platforms in education and clinical training, there is limited focused research exploring the direct relationship between internet addiction and assertiveness specifically among physiotherapy students. Understanding this correlation will help educators and institutions design targeted interventions, such as assertiveness training programs and digital wellness or healthy-technology counseling, to strengthen both professional competence and student well-being.

3. Hypothesis

- Null hypothesis (H0): There is no correlation between Internet Addiction and assertiveness in physiotherapy students.
- Alternate hypothesis (H1): There is a correlation between Internet Addiction and assertiveness in physiotherapy students.

4. Methodology

- Sampling Design: Cross - Sectional Correlational Study
- Study setting: Convenience Sampling (Based on Inclusion Criteria)
- Sample Size: 95 Target Population: Physiotherapy Students with IAT < 31
- Study setting: TMV's Indutai Tilak College of Physiotherapy,
- Materials used: Internet Addiction Test (IAT) is administered and Assertiveness Inventory is then conducted. INC
- Inclusion criteria:
 - Physiotherapy students enrolled in undergraduate programs.
 - Students including both male and female of 18–25 years of age.
 - Regular users of the internet for academic and personal purposes.
 - Students willing to provide informed consent for participation.
 - Students scoring from mild (31–49) to severe (80–100) levels on the Internet Addiction Test
- Exclusion criteria:
 - Students diagnosed with psychiatric or neurological disorders that affect communication.

5. Outcome measure

• Internet Addiction Test

The Internet Addiction Test (IAT) developed by Dr. Kimberly S. Young (1998) is a standardized 20-item questionnaire designed to assess the level of Internet dependency. Each item is rated on a 6-point Likert scale ranging from 0 (Not Applicable) to 5 (Always), providing a total score out of 100.

The Internet Addiction Test (IAT) by Dr. Kimberly Young (1998) is a 20-item questionnaire that assesses the degree of Internet dependency. Each item is rated on a 6-point scale from 0 (Not Applicable) to 5 (Always). The total score (0–100) indicates the level of addiction:

- 0–30: Normal use
- 31–49: Mild addiction
- 50–79: Moderate addiction
- 80–100: Severe addiction

Higher scores reflect greater levels of problematic Internet use. The scale is reliable and widely used for identifying Internet Addiction among students and professionals.

Reliability and Validity: The IAT has shown strong internal consistency with a Cronbach's alpha of 0.90 and satisfactory test–retest reliability across different populations. It has been validated in multiple countries and adapted for student and clinical groups, confirming its use as a reliable tool for assessing Internet Addiction.

• Assertiveness Inventory

The Assertiveness Inventory developed by Alberti and Emmons (1970) is a self-assessment tool designed to help individuals evaluate their level of assertive behavior in various social and personal situations. It consists of statements rated on a 5-point scale (0–4), where 0 = Never and 4 = Always. The inventory encourages self-reflection rather than clinical diagnosis.

- 0–20: Low Assertiveness (Passive behavior, difficulty expressing opinions)
- 21–40: Moderate Assertiveness (Occasionally assertive, may hesitate in challenging situations)

- 41–60: High Assertiveness (Confident, expressive, and able to communicate needs effectively)
- Above 60: Very High Assertiveness (Strong self-expression, may border on aggressive communication)

Reliability and Validity: Although the Assertiveness Inventory is not a standardized diagnostic test, research reports acceptable internal consistency (Cronbach's alpha = 0.78–0.85) and content validity through expert evaluation and correlation with behavioral outcomes in assertiveness training programs.

6. Procedure

- Ethical clearance was obtained from the Institutional Ethics Committee before the study began. Participants were thoroughly briefed on the study's purpose, objectives, and procedures. Informed consent was obtained before including students in the research.
- The Internet Addiction Test (IAT), a 20-item questionnaire, was administered to all participants to assess the presence and severity of internet addiction. Based on their IAT scores, students who fell within the mild to moderate range of internet addiction (meeting the inclusion criteria) were selected for further assessment.
- These selected participants then completed the Assertiveness Inventory, which consisted of 17 questions designed to evaluate assertive behavior and communication skills through situational and self-reflective questions. Both the IAT and the Assertiveness Inventory were provided to participants in person, in the form of printed questionnaires, ensuring a consistent and standardized administration process.
- Descriptive statistics were used to summarize the results from both the IAT and the Assertiveness Inventory, offering a clear overview of participants' levels of internet addiction and assertiveness.
- This structured approach aimed to understand the correlation between internet addiction and assertiveness, providing a foundation for further research or interventions.

7. Statistical analysis

All data were compiled and analyzed using the Statistical Package for the Social Sciences (SPSS) version 26.0. Descriptive and inferential statistical methods were applied to summarize and test the relationships among the main variables of the study.

- **Descriptive Analysis:** Descriptive statistics were calculated for all variables including Internet Addiction score, Assertiveness score, and Age. For each variable, the mean, standard deviation, minimum, maximum, and range were determined.
- **Correlation Analysis:** To examine the relationship between Internet Addiction, Assertiveness, and Age, the Pearson Product Moment Correlation Coefficient was used. This statistical test measures the strength and direction of a linear relationship between two continuous variables. It was chosen because both Internet Addiction and Assertiveness are measured on interval scales and the data met the assumption of linearity.
- **Test of Significance:** The significance of the correlation was tested at a 5 percent level ($p < 0.05$). A two-tailed test was used to determine whether the correlation between the variables was statistically significant.
- **Confidence Interval:** To determine the precision of the correlation coefficient, a 95 percent confidence interval was calculated using the Fisher z transformation.

- Effect Size Interpretation: According to Cohen's guidelines for interpreting correlation coefficients, values around 0.10 represent a small effect, around 0.30 represent a medium effect, and 0.50 or above indicate a large effect size.

8. Interpretation

The statistical analysis of the data revealed a strong and statistically significant positive correlation between Internet Addiction and Assertiveness among physiotherapy students. The correlation coefficient ($r = 0.71$) indicates a strong positive relationship, and the p-value ($p = 0.0005$) confirms that this association is statistically significant at the 0.05 level of significance. This finding suggests that students with higher Internet Addiction scores also tend to have higher Assertiveness scores. The positive relationship observed in this study implies that as internet usage increases, assertiveness levels among students also tend to increase. This could be explained by the fact that in recent years, internet usage has evolved from being a source of distraction to becoming a major medium for education, communication, and professional networking. Physiotherapy students often use the internet for academic purposes, virtual seminars, online case discussions, and research-related communication, all of which can enhance exposure, confidence, and self-expression, leading to greater assertiveness. On the other hand, the relationship between Internet Addiction and Age was found to be moderate and negative ($r = -0.38$, $p = 0.098$), but this was not statistically significant. This means that older students in the study reported slightly lower internet addiction scores, although this trend was not strong enough to be meaningful. Similarly, the relationship between Assertiveness and Age was also moderate and negative ($r = -0.41$, $p = 0.073$), indicating that assertiveness might slightly decrease with age in this group, but this relationship too was not statistically significant. Most students in this study were classified in the Normal to Moderate Internet Addiction categories and Mild to Moderate Assertiveness categories. This distribution suggests that while many students are regular internet users, only a few exhibit patterns that could be considered excessive or problematic. The overall pattern of results indicates that the internet, when used primarily for academic and professional purposes, may not adversely affect assertiveness and may in fact encourage open communication and self-confidence among students. These findings fulfill the primary objective of the study—to determine the correlation between Internet Addiction and Assertiveness—and demonstrate that a significant and strong relationship exists between the two variables. The secondary objectives, which involved exploring the influence of age and understanding the prevalence of Internet Addiction among students, were also met through the descriptive and correlational analyses. In summary, the data interpretation shows that Internet Addiction and Assertiveness are positively linked among physiotherapy students, with higher internet engagement corresponding to higher assertiveness levels. The results provide insight into how the academic use of the internet may play a constructive role in shaping communication skills and personal development among future physiotherapists.

The above data is pictured in the next graph.

Figure 1: Frequency Distribution of Internet Addiction Categories

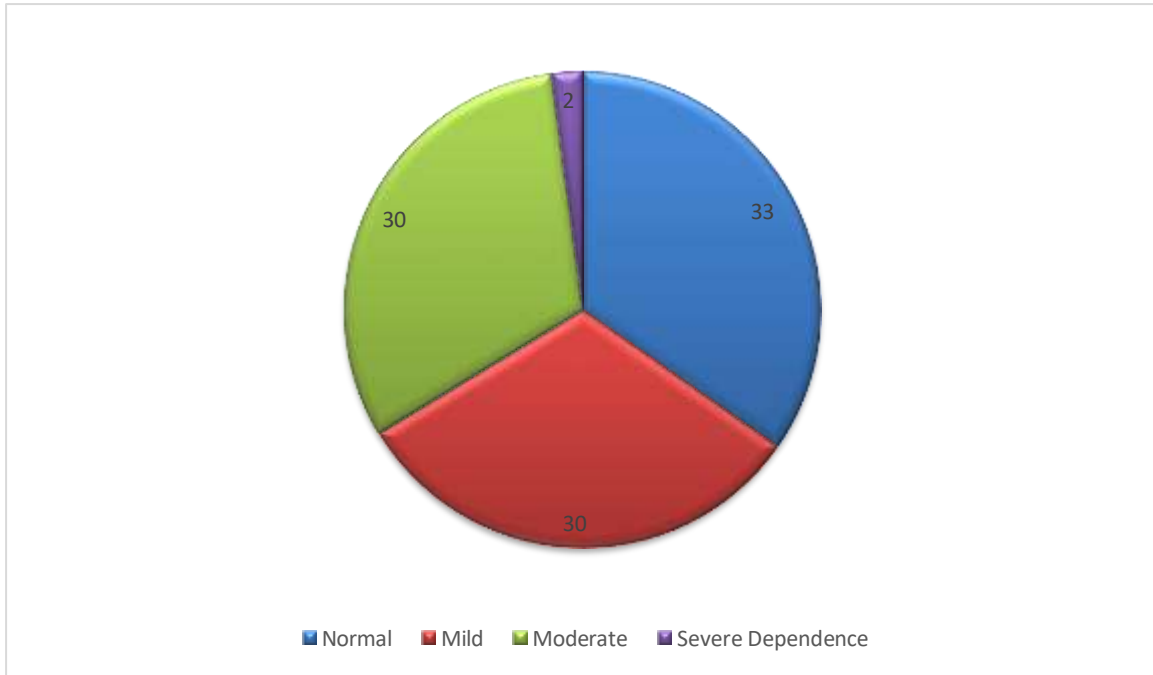


Figure 2: Frequency Distribution of Assertiveness Categories

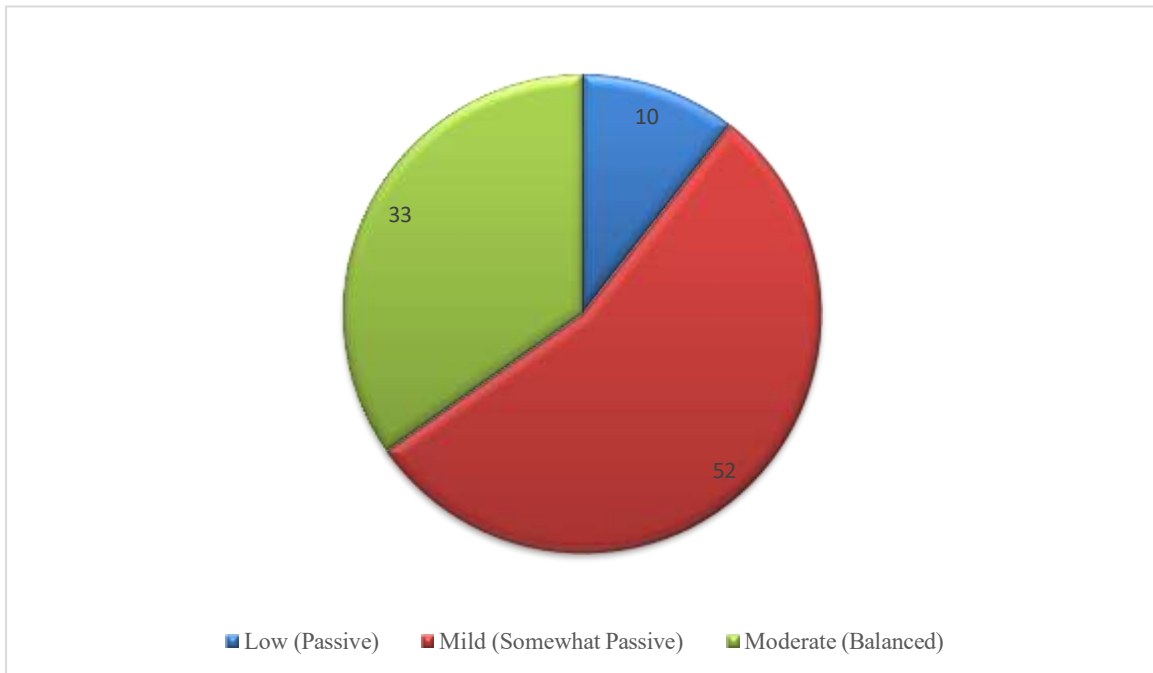
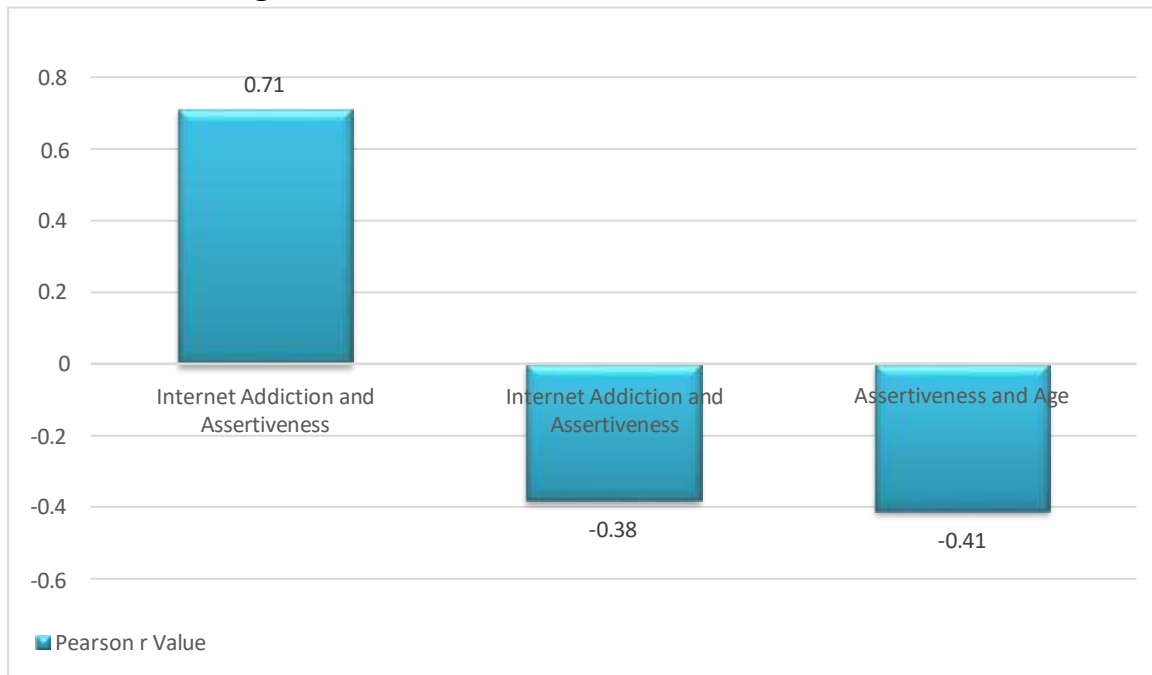


Figure 3: Correlation Coefficients Between Variables



9. Result

Pearson correlation coefficients were calculated to explore relationships between Internet Addiction scores, Assertiveness scores, and Age. Statistical significance was accepted at $p < 0.05$.

Data Overview Descriptive Statistics

Variable	Mean	Standard Deviation	Range
Internet Addiction	36.1	13.31	8 – 85
Assertiveness	26.6	9.07	7 – 49
Age	22.7	1.3	20 – 25

- Frequency Distribution of Internet Addiction Categories
- Normal: 33 students (34.7%)
- Mild: 30 students (31.6%)
- Moderate: 30 students (31.6%)
- Severe Dependence: 2 students (2.1%)
- Frequency Distribution of Assertiveness Categories
- Low (Passive): 10 students (10.5%)
- Mild (Somewhat Passive): 52 students (54.7%)
- Moderate (Balanced): 33 students (34.8%)

Variable Compared	r	P-value	Interpretation
Internet Addiction and Assertiveness	0.71	0.0005	Strong positive, statistically significant
Internet Addiction and Age	-0.38	0.098	Moderate negative, not statistically significant

Assertiveness and Age	-0.41	0.073	Assertiveness and Age
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Method Used — (Pearson Correlation + Significance Testing)

Below is a step-by-step explanation of the statistical method used to examine relationships between Internet Addiction, Assertiveness, and Age — how the numbers are calculated, what assumptions must hold, and how to report the results properly.

10. Discussion

The present study was conducted to examine the correlation between Internet Addiction and Assertiveness among physiotherapy students. A total of 101 students participated in the study. The results showed a strong and statistically significant positive correlation between Internet Addiction and Assertiveness ($r = 0.71$, $p = 0.0005$). This indicates that students who had higher Internet Addiction scores also tended to have higher Assertiveness scores. Although moderate negative relationships were observed between both Internet Addiction and Age and Assertiveness and Age, these were not statistically significant. The findings highlight that most students exhibit mild to moderate levels of internet use and assertiveness, reflecting a generally healthy balance between online activity and interpersonal communication. This study contributes to the understanding of behavioral patterns among physiotherapy students and emphasizes the importance of promoting responsible internet use and assertiveness development within physiotherapy education. Encouraging digital awareness and interpersonal communication skills may help students achieve both academic success and professional competence in their future clinical practice. This finding contrasts with several earlier studies that reported a negative relationship between excessive internet use and social communication skills. However, it is important to consider that the nature of internet use has changed significantly in recent years. For physiotherapy students, the internet is a valuable platform for academic study, communication, and professional networking. It is possible that the positive correlation reflects the constructive use of the internet for learning and collaboration, which can indirectly improve assertiveness and confidence in communication. The study by Zegarra Zamalloa and Cuba Fuentes (2017) reported that higher levels of internet addiction were associated with lower social skills among adolescents. The difference between that finding and the present study may be due to differences in the study population, age group, and purpose of internet use. Physiotherapy students use online resources for academic purposes, attending webinars, online discussions, and virtual patient case studies, all of which may strengthen communication skills and assertive behavior. A moderate but non-significant negative relationship was found between Internet Addiction and Age and between Assertiveness and Age. The narrow age range of participants (20–25 years) may have reduced variability and affected the strength of these relationships. The trend suggests that younger students might be more confident and active in online communication, which may explain slightly higher levels of assertiveness and internet use. The findings emphasize the importance of balanced internet use and the potential role of digital engagement in building assertiveness among future healthcare professionals. Internet use should not be viewed as entirely harmful; rather, its educational and social dimensions can positively influence student development when managed appropriately.

11. Limitations and future scope

Limitations: The study was cross-sectional in design, which prevents establishing a cause-and-effect relationship between Internet Addiction and Assertiveness. The data were collected from a single institution;

therefore, the findings cannot be generalized to all physiotherapy students. The use of self-reported questionnaires may have introduced response bias, as participants might have over- or under-estimated their internet use or assertiveness. Other psychological and social factors such as stress levels, personality traits, and social support systems were not considered, which could have influenced the results.

Future Scope: Future research should include a larger and more diverse sample across multiple physiotherapy colleges to increase the generalizability of the findings. Longitudinal studies are recommended to explore how patterns of internet use and assertiveness change over time and whether one influences the other. Intervention-based studies can be conducted to evaluate the effectiveness of assertiveness training and digital wellness programs in improving student communication and reducing problematic internet use. Comparative studies among different healthcare disciplines such as nursing, medicine, and occupational therapy could help determine whether the observed patterns are consistent across professional education programs. Qualitative studies exploring students' perspectives on their online habits and communication skills would provide deeper insights into behavioral patterns and coping strategies.

12. Conclusion

The present study found a strong positive correlation between Internet Addiction and Assertiveness among physiotherapy students, indicating that increased internet use was associated with higher assertiveness scores. This suggests that, in an academic and professional context, the internet may serve as a tool for learning and confidence-building rather than only as a source of distraction or dependence.

13. Acknowledgement

I am delighted to present this synopsis as part of my final year research project and wish to extend my heartfelt thanks to everyone who supported me throughout this work. I would like to express my sincere gratitude to my guide, Dr. Mahendra Shende (PT), for his invaluable guidance, encouragement, and continuous support throughout the course of this research. His expert advice, constructive feedback, and patience have been instrumental in the successful completion of this study. I also extend my heartfelt thanks to TMV's Indutai Tilak College of Physiotherapy for providing the necessary facilities and an encouraging academic environment to carry out this work. My sincere appreciation goes to all the participants who took part in this study for their time, cooperation, and willingness to contribute to this research. I am also grateful to my family, friends and classmates for their assistance, motivation, and moral support during this project.

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