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ORIGINAL

The significance of interprofessional collaboration in enhancing patient safety within healthcare

La importancia de la colaboración interprofesional para mejorar la seguridad del paciente en la asistencia sanitaria

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ABSTRACT

When healthcare experts from many disciplines work together to provide thorough and efficient patient care, this is referred to as interprofessional collaboration. It is impossible to overestimate the importance of interprofessional cooperation in raising patient safety within the healthcare system. 306 students participated in a 4-hour program that included three team simulation exercises and a 1-hour TeamSTEPPS session. By program, students were divided and asked to choose a main point. Perspectives, opinions, and possibilities for collaboration were investigated in pre- and post-assessments. Pre and post tests were completed by 49 % of the students. Improvements in attitudes toward teamwork, motivation, the value of training, self-efficacy, and TeamSTEPPS abilities are significant. Strengthened interprofessional team interaction and understanding of patient advocacy. For patient safety, efficient collaboration among teammates is crucial. In a significant interprofessional TeamSTEPPS-based program encompassing four student professions, we establish beneficial attitude and knowledge consequences.

Keywords: Interprofessional Collaboration; Healthcare; Patient Safety; TeamSTEPPS; Improvement.

RESUMEN

Cuando expertos sanitarios de muchas disciplinas trabajan juntos para proporcionar una atención al paciente completa y eficiente, se habla de colaboración interprofesional. Es imposible sobrestimar la importancia de la colaboración interprofesional para aumentar la seguridad de los pacientes dentro del sistema sanitario. 306 estudiantes participaron en un programa de 4 horas que incluía tres ejercicios de simulación en equipo y una sesión TeamSTEPPS de 1 hora. Por programa, se dividió a los estudiantes y se les pidió que eligieran un punto principal. En las evaluaciones previas y posteriores se investigaron las perspectivas, opiniones y posibilidades de colaboración. El 49 % de los alumnos completaron las pruebas pre y post. Las mejoras en las actitudes hacia el trabajo en equipo, la motivación, el valor de la formación, la autoeficacia y las habilidades de TeamSTEPPS son significativas. Fortalecimiento de la interacción del equipo interprofesional y comprensión de la defensa del paciente. Para la seguridad del paciente, la colaboración eficaz entre compañeros de equipo es crucial. En un programa interprofesional significativo basado en TeamSTEPPS que abarca cuatro profesiones estudiantiles, establecemos consecuencias beneficiosas en cuanto a actitudes y conocimientos.

Palabras clave: Colaboración Interprofesional; Asistencia Sanitaria; Seguridad del Paciente; TeamSTEPPS; Mejora.

INTRODUCTION

A key component of providing healthcare is interprofessional teamwork, especially when it comes to improving patient safety. The delivery of high-quality treatment to patients is a shared objective of numerous professions that make up the healthcare system. Doctors, nurses, pharmacists, social workers, and other healthcare professionals are among these professions. Each of these professions possesses+ a special set of abilities that can be used to enhance patient outcomes.[1] Patient safety is a crucial component of healthcare delivery, and over the years, numerous initiatives and efforts have been made with the goal of improving patient safety. Patient safety is the concept of keeping patients safe while receiving medical care. Damage can be caused by mistakes or omissions in the provision of care and can be either physical, psychological, or emotional. By encouraging effective communication, collaborative decision-making, and coordinated care, interprofessional collaboration significantly contributes to improving patient safety in the healthcare system.[2]

A key aspect of interprofessional collaboration is effective communication, especially when it comes to improving patient safety. One of the main reasons for unfavorable outcomes in the medical field is a breakdown in communication. When healthcare professionals collaborate successfully, they can share ideas and viewpoints, exchange information, and come to a shared knowledge of the patient's needs. Additionally, good communication may guarantee that patients get the care they need and help avoid mistakes and omissions.[3] Another crucial component of interprofessional cooperation in improving patient safety is shared decision-making. Healthcare workers frequently have to make complicated judgments that call for expertise from several areas. Together, healthcare professionals can use their knowledge and experience to make decisions that are well-informed and take into account all facets of the patient's care. Involving patients in the decision-making process and allowing them to participate in the creation of their care plans can help to enhance patient-centered care.[4]

The interprofessional partnership that improves patient safety also includes coordinated care. The coordination between these specialists is essential in ensuring that patients receive the right care because patients frequently receive care from many healthcare providers. Together, healthcare providers can create comprehensive, coordinated care plans that guarantee patients receive the proper care at the appropriate time. Additionally, coordinated care can lower the chance of unfavorable outcomes and errors and omissions.[5] Through the promotion of a safety-conscious culture within healthcare organizations, interprofessional collaboration can also serve to improve patient safety. A culture of safety is one in which healthcare personnel place a high priority on patient security and collaborate to detect and address security issues. Together, healthcare personnel may achieve a shared knowledge of the significance of patient safety and cooperate toward a common objective of providing safe and efficient treatment.[6] A key component of providing healthcare is interprofessional teamwork, especially when it comes to improving patient safety.

Health care personnel are becoming more interested in having acceptable nontechnical skills (NTS) in surgical areas, although these abilities are rarely explicitly taught. Despite technical proficiency and understanding, teams still make mistakes that endanger patient safety. To educate, practice, and apply these abilities through simulation, a one-day, multiprofessional, interdisciplinary course was developed by them. Teams were urged to concentrate on NTS throughout the situations, including communication tactics, situational awareness, and cues like checklists. Following a comprehensive debrief with knowledgeable clinical observers. In order to determine whether skills were still being used and how they affected safety, documents was gathered through self-evaluations, immediate feedback, and six month feedback.[9] This narrative review sought to survey the patient safety literature in order to pinpoint interprofessional intervention strategies, evidence sources, and reported results. It was discovered that the majority of the studies that were included were done in an acute care setting in North America. The majority of the time, research involved qualified nurses and doctors working together within healthcare and medical facilities. In almost half of the studies included in this review, educational strategies like Team STEPS were used to help practitioners become more proficient at providing safe patient care.[10] Ineffective collaborative practice brought on by learning in silos throughout the undergraduate years might have negative outcomes. After taking part in training sessions utilizing the Group Plan and Implements to Improve Concert and Patient Safety, healthcare personnel demonstrated increased teamwork skills. Statistics were shown to be relevant for the team efficiency, evaluation of IPSE learning, and IPEC competence scores. The need for IPSE in the education system, the effect of organized statement tools on patient safety, and knowledge of the roles and duties in interprofessional teamwork were among the themes that arose.[11] Interventions in interprofessional education (IPE) don't always produce the desired learning results. Given its emphasis on team performance, Team-Based Learning (TBL) would seem to be an appropriate pedagogical approach for IPE; nevertheless, tiny is known about interprofessional TBL as an educational outline for patient safety. Lochner L et al.[12] seeks to (1) describe participants' responses to TBL, (2) track their progress toward meeting IPE goals for learning, and (3) record their attitude changes toward patient safety behaviors. Maximizing patient safety and delivering high-quality patient care depend on effective interprofessional collaborative practice; integrating these techniques into the curriculum is a crucial first step toward implementation. This study looked at whether teamwork, interprofessional collaboration, and student understanding of TeamSTEPPS principles might all be

improved by simulation training. All of the targeted measurements showed a significant improvement in student performance.[13] The findings of two workshops on historical and contemporary patient safety challenges that directly affect leadership in the interprofessional area are presented in this article. The paper examines the effects of team structures that have become more flattened in an environment where teamwork is continually weighed against providing high-quality, safe patient care. Although past case studies reveal circumstances that could educate and animate conversations about patient safety in a global context, these challenges are primarily anchored in developments within a UK environment.[14] The Fuld Fellows Program offers pre-licensure nursing students who have been chosen a foundation in the science of patient safety, quality improvement, and leadership through curriculum and a mentored experience working on a quality improvement project. They looked at the effect of this training on the Fellows' systems thinking and patient safety expertise.[15]

Healthcare practitioners have a distinctive set of abilities that can be used to enhance patient outcomes. In order to eliminate errors and omissions and guarantee that patients receive the right care, interprofessional collaboration can help to improve effective communication, shared decision-making, and coordinated care. When healthcare workers prioritize patient safety and collaborate to find and address safety issues, interprofessional collaboration can also help to foster a culture of safety within healthcare organizations. In order to increase patient safety and the standard of care provided, healthcare organizations should promote and support interprofessional collaboration.[7,8] The aim of this article is to explain and illustrate the efficacy of a novel interprofessional training initiative utilizing simulation.

METHODS

A team of 19 student volunteers from different health profession schools, nine interprofessional academics, six staff employees, and three adult acute cases were created to show the benefits of collaboration in the healthcare sector. They were created to offer interprofessional teams the chance to show off their capacity for working together in a time of trouble while providing care to patients and family members. The 3 adult acute instances were a teen with asthma exacerbation, an elderly man with congestive heart failure, and a man who had recently undergone surgery with supraventricular tachycardia. In June 2010, 49 students assessed an updated version of TeamSTEPPS training and every one of the three adult acute cases. We chose 3 pediatrics and 3 obstetrics situations to replicate comparable skill requirements and teach teams in interacting in areas related to the pupils' career objectives after the successful display of the 3 adult examples. Sepsis, severe asthma, and sudden seizures were the pediatric cases. Premature vaginal delivery, a minor postpartum hemorrhage, and a mild postpartum hemorrhage worsened by mistake were the three obstetric instances.

Interdisciplinary team capstone

They took the opportunity to utilize the University of Washington School of Medicine's capstone week towards the end of the institute year to organize interactive interprofessional training sessions for graduating students in medicine, bachelor's in nursing, PharmD, and master's in PA. All students, with the exception of the PA students who volunteered, were expected to take part in the interprofessional training. Throughout the capstone week, students engaged in one 4-hour training block. Students from 4 healthcare professional programs were trained to work as a team through the Interprofessional collaboration Team Capstone event. Three distinct (focus area) trainings were available for students to choose from: Adult acute care, pediatric patients, obstetric cases, or adult acute care. Students might choose a practice area that was most akin to their intended speciality because to this split. Over the course of four days, the training sessions were conducted at the training facilities of two academic medical institutions. The educational intervention comprised three simulated exercises and a didactic session for each student focal area. Students received 40 minutes of moralistic education on patient safety and TeamSTEPPS communication skills after participating in an introduction exercise designed to promote interprofessional collaboration.

Impact evaluation of the intervention

Researchers created and chosen tools to evaluate attitudes, abilities, and knowledge in order to gauge the effect of the education on students' learning .The UW Macy assessment team, which consisted of a physician and PA educator (LV), an exploratory physician fellow (KB), a nurse practitioner (SW), a pharmacy technician (DH), 2 medical educators (DB, DS), a nursing educator (BZ), and 2 nursing graduate students (CC, EAR), created and approved the assessments). These tools measured student self-efficacy in terms of their ability to use TeamSTEPPS communication skills in practice, attitudes toward these abilities, self-reported knowledge, and motivation to put them into practice, as well as their value or utility. The demographics of the student responses were broken down into three categories. These included the educational program the student was enrolled in, their sex, age, any prior healthcare experience they had before beginning their current educational path, and their level of experience working with healthcare teams.

Both before to and following training, two tests were given. The TeamSTEPPS Collaboration Attitudes

Questionnaire (TAQ) was given to participants in order to gauge their attitudes toward team communication. The TeamSTEPPS communications model's five underlying components are assessed by 30 Likert-type items in the TAQ, a validated instrument. The Approaches, Inspiration, Utility and Self-Efficacy (AMUSE) questionnaire, which consists of 21 Likert-type items, was used to gauge attitudes. The authors constructed the attitudes, motivation, and utility items after taking into account the instruments already in use to evaluate related team components. Following Bandura's theory of agency, which holds these self-efficacy measures were motivated by Bandura's ideas to design balances to measure efficacy, that individuals act on their surroundings, make objectives, and track progress while learning both directly from their own experiences and indirectly from examining another two fresh tools and the AMUSE were created to determine if pupils had the opportunity to practice or notice particular team manners, as well as whether these instruction prospects were highly regarded and defined skills that students thought would be beneficial for carrying toward and for which they had enough information to effectively apply in practice. Pre- and post-surveys were conducted online, and they typically took 10 to 15 minutes to complete. Students had access to pretraining surveys from 2 weeks before training to 2 days before the training. Online post-training assessments were filled out on Regardless of the participant's day finished training or about two weeks afterwards. They were unable to require pupils to complete several postassessments due to logistical issues. Students were divided into two groups at random: those who complete the evaluation on the training day and those who did so two weeks later. As a result, we were able to evaluate how training effects changed over time. The University of Washington Institutional Review Board gave its approval to all procedures.

Analyses of statistics

The training objectives were taken into consideration when choosing the statistical analysis and tools. Using paired t tests, within-group differences (pre vs post) were analyzed. ANOVA was utilized to investigate variations among interprofessional student groups. Using Cronbach's alpha, the internal consistency of the instrument was evaluated. A significance level of p=0,05 was used in all tests. The Bonferroni criterion was used to alter the critical values when several tests were run concurrently in order to lower the probability of Type I error.

RESULTS

306 students in the fourth year of medical school, the 3rd of nursing, the 2nd of pharmacy school, and the 2nd of PA school finished the program. 149 (48,7 %) of the total student body of 255 completed both the pre and post assessments, making up the remaining 255 (83,3 %) students. A breakdown of the graduates by professional program is shown in figure 1.

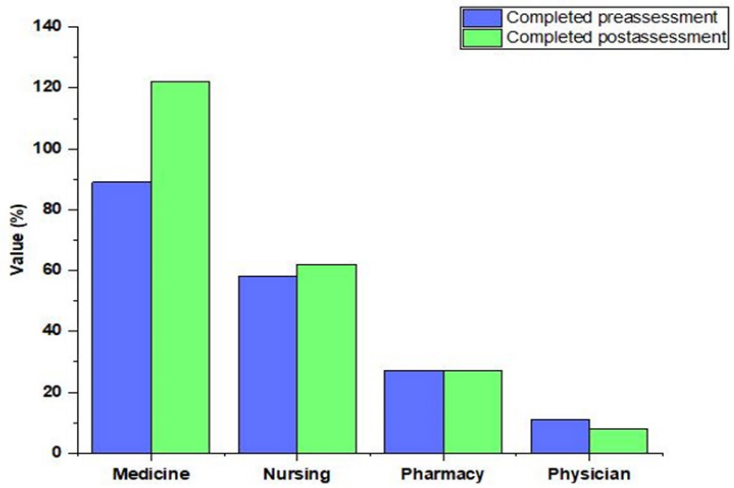

Figure 1. Result of Pre-assessment & post-assesment

For the completer categorization, there was no difference that was statistically significant (X^2=5,33, p=ns). Regarding profession, sex, age, or prior healthcare experience, respondents did not substantially vary from non-respondents or pupils who only completed one assessment component (each p=ns). As a result, the analyses presented here include only those students who participated in both the pre-and post-assessments, allowing for a comparison of the study variables. A breakdown of the participants by sex, age, and healthcare and medical team involvement is provided in table 1.

Table 1. Demographics for students completing both the pre-assessment and post-assessments (n=149)

Factors	Values
Age (M±SD)	
Nursing	27,6 ± 6,6
Medicine	29,5 ± 3,5
PA	35,5 ±5,6
Pharmacy	25,6 ± 3,3
Women (n (%))	
Nursing	40 (90,1)
Medicine	38 (54,4)
PA	6 (70,7)
Pharmacy	16(69,2)
Teamwork in healthcare (n (%))	
Nursing	15 (70,1)
Medicine	22 (90,3)
PA	7 (75,6)
Pharmacy	2 (24,0)
Experience in healthcare (n (%))	
Nursing	25 (35,5)
Medicine	27 (59,0)
PA	6 (29,7)
Pharmacy	9 (99,9)

Depending on which group you belonged to, post-assessments were given either on the training day or two weeks afterward. Changes in scores for all markers through the pretest and posttest were compared using one-way ANOVA. After considering the likelihood of a higher Type I error rate, no significant differences were discovered as an outcome of the post-administration survey date (each $p>0,10$). As a result, by combining the staggered post-measures, a single major set of post-measures was produced. Only seven PA students completed the pre-assessment and post-assessment. Because there weren't enough PA students to classify them as a separate category, they weren't considered in the group analysis.

Initial training goal

Positive attitudinal changes (that includes motivation and self-efficacy) were the focus of our initial training objective. After training, student attitudes, motivation, utility, and self-efficacy were evaluated using the AMUSE. Internal consistency values for each subscale ($\propto$=0,90-0,79) and the combined total ($\propto$=0,90) were satisfactory. The impact was measured by change scores. Figure 2 shows that the AMUSE overall score ($p<0,001$) and the 4 AMUSE subscales ($p<0,001$ to $p=0,005$) had substantial positive improvements. This shows that training improved students' attitudes about teamwork, that they were more inclined to be active in teams, valued this kind of practice and training more, and that they felt confident using the abilities they had acquired. The AMUSE utility score showed the most impact. The AMUSE self-efficacy score had the least impact. The attitudes, motivation, utility beliefs, and self-efficacy of individual students tended to improve; this impact was comparatively consistent throughout the professional program and target area.

The TeamSTEPPS Attitude Questionnaire (TAQ) pre- and post-scores are also included in figure 3. Mutual Support, one of the TAQ subscales, showed moderate internal consistency ($\propto$=0,62). Internal consistency for the remaining TAQ subscales ($\propto$=0,85-0,94) and the TAQ aggregate ($\propto$=0,93) was satisfactory. TAQ Total Score ($p<0,001$), TAQ Situation Monitoring (p 0,001), TAQ Team Structure ($p<0,002$), TAQ Communication (p 0,002), and TAQ Mutual Support (p 0,003) all showed statistically significant improvements. The TAQ Leadership score did not improve significantly ($p=0,062$). The TAQ Situation Monitoring had the most impact, while Communication showed the least significant impact. Individual students demonstrated improvements in the majority of the TAQ subscales, mirroring the AMUSE findings. This impact was not uniquely tied to the pupil's professional program or the training's focus area.

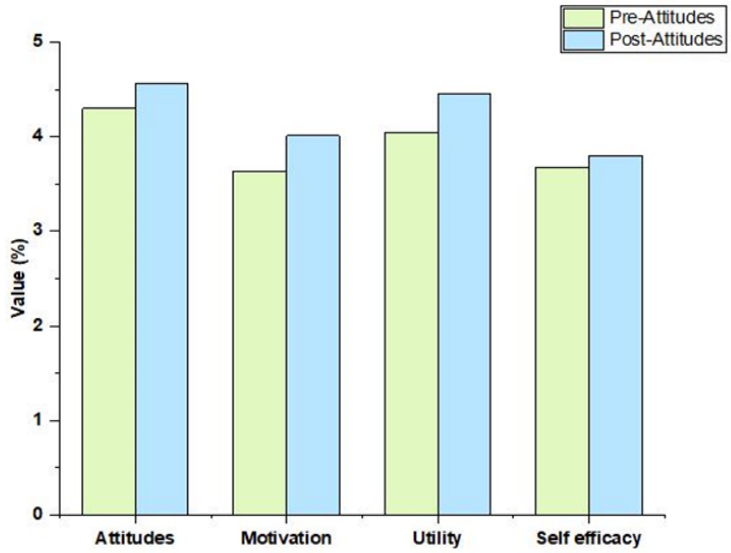

Figure 2. AMUSE Pre & post attitude results

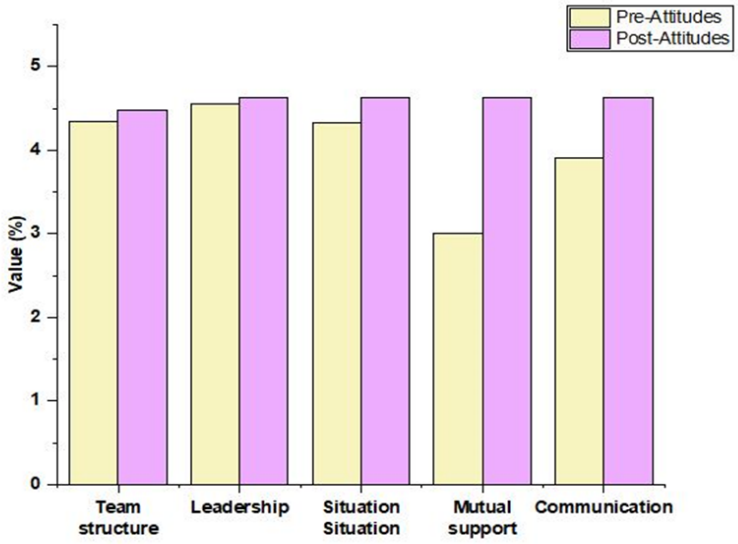

Figure 3. Result of TeamSTEPPS Pre & post attitude

To determine any variations among groups of pupils from various occupations, one-way ANOVAs were performed on the altered score of the TAQ and AMUSE accumulated total scores and subscales. Only motivation ($p=0,010$, $\eta^2=0,06$) and self-efficacy ($p=0,005$, $\eta^2 =0,07$) showed significant statistical differences amongst AMUSE subscales when the analysis was done by the program of study (medical, nursing, pharmacy). This was reflected in lower postscores for pharmacy students than for medical or nursing students in terms of motivation. Those studying medicine reported greater post-levels of self-efficacy than those studying nursing or pharmacy.

Second exercise goal

Our second training objective was to offer students the chance to watch and practice effective group communication. Interprofessional learners were given a rating on how frequently of a number of behaviors they saw or engaged in during the post assessment. Figure 4 provides these behaviors.

Due to the fact that these tests could only be administered after training, we have provided the outcomes for all pupils who took the posttest. The likelihood that respondents had witnessed team leaders delegating responsibilities and discussing information with team members as well as providing examples of effective communication techniques that reduced mistake was much higher. Less frequently reported were observations of team members using sufferers and, or relatives as essential members of the care team, effectively raising concerns about patient safety, or providing assistance to one another.

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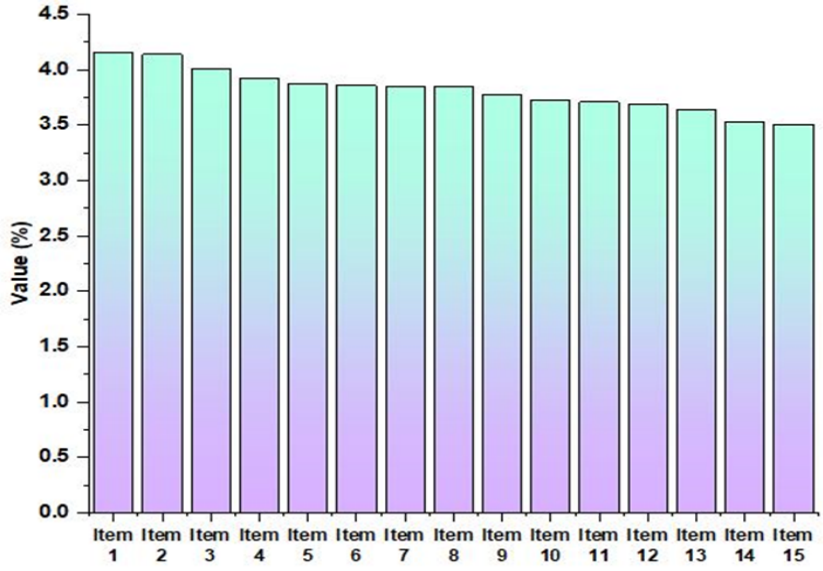

(a) Mean value of 1-15 items

Item 1 Leaders assigned tasks to team members to help team functioning.	Item 2 Leaders shared information with team members	Item 3 Team member communication skills decreased therisk of errors	Item 4 Team members demonstrated a shared mental model
Item 5 Team members were consulted for their experience	Item 6 Team members scanned the environment for important situational cues	Item 7 Leaders discussed the patient's plan with their team	Item 8 Team members exchanged information with the patients and their families
Item 9 Leaders created opportunities for team members to share information	Item 10 Team members asked for assistance	Item 11 Team members anticipated needs	Item 12 Team members asked questions about information provided by other team members
Item 13 Team members asserted patient safety concerns until heard	Item 14 Team members offered help to other team members	Item 15 Patients and family members utilised as critical components of the care team	

(b) Description of 1-15 items

Figure 4. Evaluation of the frequency of spotting or engaging in certain behaviors after training

Third exercise goal

The improvement of students' understanding of teamwork in figure 5, it was the third training objective. In the post-assessment, students expressed varying degrees of contract that training had improved knowledge of the important wisdom objectives.

The ability to speak up within teams and beliefs regarding the advantages of implementing TeamSTEPPS underwent the biggest improvements. Understanding of how collaborative efforts and patient safety are related by students has undergone the least amount of change.

Evaluation information

Participants conducted a brief review of the skill following the training. Whole students in all of the three focus areas said they found the courses to be beneficial. They particularly praised the TeamSTEPPS introduction and the final debrief after the three cases were finished. Additionally, participants were asked how much they agreed with certain components of the training. Most participants agreed that the materials were appropriate in terms of level, value for teaching teamwork skills, realistic knowledge of the difficulties encountered when collaborating with interprofessional teams, and opportunity to interact with learners from other professions. Additionally, the most beneficial training experience was requested of the students. Three recurring refrains appeared: (1) importance of the chance to interact with pupils from other professional schools; (2) the

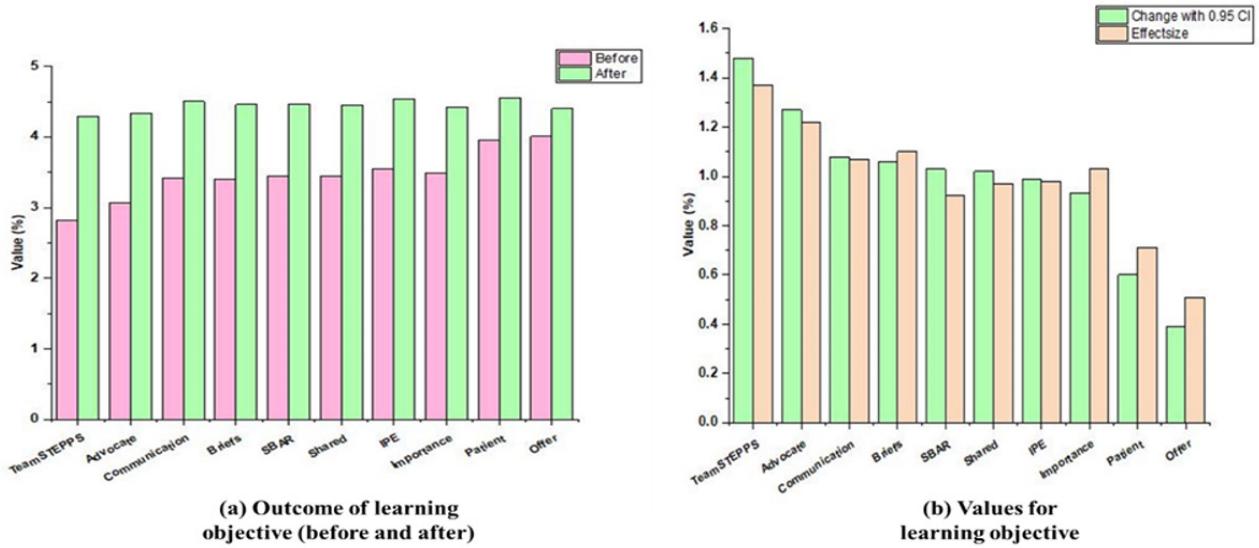

Figure 5. Development in the pre- and post-reported grasp of the main TeamSTEPPS learning goals

significance of developing and perfecting certain communication skills in a compassionate environment; and (3) the importance of honing abilities as part of an interprofessional team.

DISCUSSION

A number of objectives were met by the Interprofessional Team Capstone. The substantial logistical obstacles we overcame are evidence of our early triumphs. These included finding and arranging for students from 4 different health professions, maintaining sustenance from the program directors and deans of the school, finding enough volunteer instructors to staff the training courses for 4 full days, training instructors using a "train-the-trainer" method, and maintaining the physical space required for conducting the simulation training. The fact that students give themselves favorable feedback and that the training has changed their attitudes, beliefs, and confidence is evidence of additional accomplishments. This may be due, in part, to the multimodal circumstance improvement strategy that integrated manikin simulator with a standardized patient or standardized household supporter. This gave us the opportunity to combine the advantages of both delivery methods to give students a rich learning environment.

The scenarios were regarded as plausible and interesting, the communication difficulties as significant, and the chance to collaborate in interprofessional teams as advantageous. The students said they had fun with the events and that they had gained professional advantages from taking part. The benefit was demonstrated by stronger views toward interprofessional training, raised both internal and external incentives to participate in subsequent courses, a general understanding of the value of TeamSTEPPS training on interaction, and a higher level of perceived self-efficacy in applying the training's skills. Whether students were surveyed the day after training or two weeks later, this remained the case. The importance of working together with pupils from other professions was one of the conclusions that appeared most frequently in written statement reports from pupils. While the majority of participants had past clinical experience working with doctors and nurses from various professional programs, most had minimal or no previous interprofessional experience with their future counterparts. Peer-to-peer learning may occur in an environment with fewer consequences and less pressure as contrasted with collaborating in teams of health professionals taking care of real patients.

CONCLUSIONS

Interprofessional collaboration is essential for providing thorough and efficient patient care and improving patient safety within the healthcare system. The study mentioned in the prompt involved a significant interprofessional TeamSTEPPS-based program that resulted in improved attitudes toward teamwork, motivation, the value of training, self-efficacy, and TeamSTEPPS abilities among students. Additionally, the program led to strengthened interprofessional team interaction and understanding of patient advocacy. Overall, the study highlights the importance of interprofessional collaboration in healthcare and the positive impact of interprofessional training programs on healthcare professionals' attitudes and knowledge. Consider the significant limitations of our study. First off, there was no clearly designated control group in this straightforward pre-post design. It's probable that some of the student postresponses were influenced by other components of their ongoing professional development. The short period between preadministrations and postadministrations helps to reduce this worry. The preassessment may have, however, sensitized the students to the assessed aspects

of the group communication training, making them more aware and attentive to them. Few studies, however, adhere to the strict criteria required to infer links between the various training components and particular results, and the empirical support for such trainings has come under scrutiny.Future research involving student subjects in randomised controlled experiments is required, and the results must include professional practice in the future.

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CONFLICTS OF INTEREST

None.

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