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Evaluating undergraduate palliative care education: Changes in nursing students' attitudes toward end-of-life care following a curriculum-based programme

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Abstract

Aim

To evaluate the preparedness of undergraduate nursing students for the provision of end-of-life care and to identify their self-perceived educational needs in this domain.

Background

The adequate preparation of nursing students for end-of-life care delivery remains a persistent challenge within undergraduate nursing curricula. A thorough understanding of students' educational needs in this domain constitutes a prerequisite for the development of effective didactic interventions.

Design

A cross-sectional study.

Methods

The study was conducted among 101 undergraduate nursing students, who were invited to complete a questionnaire comprising 9 items derived from the Polish adaptation of the FATCOD-B scale, alongside an author-developed 15-item instrument designed to assess educational needs pertaining to the care of dying patients. Statistical analysis was performed using the Wilcoxon signed-rank test and linear mixed-effects models.

Results

The mean total FATCOD-B-PL score (9-item version) increased from 32.1 ± 3.9 to 33.9 ± 4.2 points ($p = 0.0002$), reflecting a small-to-moderate improvement in attitudes toward the care of dying patients ($dz \approx 0.4$). Item-level analysis identified statistically significant improvements across four domains, with the most pronounced gains observed in areas pertaining to communication about death and the dying process. In self-assessment, more than half of the participants (53.5%) rated their knowledge of end-of-life care as good or very good.

Conclusions

The findings indicate that palliative care education grounded in a structured curriculum and supplemented with simulation-based components may substantially contribute to the development of nursing students' attitudes toward end-of-life care, while concurrently highlighting domains of unmet educational need.

Introduction

Preparing undergraduate nursing students for end-of-life care is a persistent challenge for nursing education worldwide. Despite the central role of nurses in caring for dying patients, many students report discomfort, uncertainty and emotional distress when first encountering death in clinical practice [1]. Educational programmes therefore need to address not only knowledge and technical skills, but also attitudes, communication competencies and ethical sensitivity related to end-of-life care. From an educational perspective, effective preparation for end-of-life care requires more than the acquisition of clinical knowledge and technical competencies. Nursing education programmes should intentionally address students' attitudes towards death and dying, develop communication skills for sensitive and emotionally complex interactions, and support ethical reasoning in relation to end-of-life decision-making [2].

Changes in the demographic structure of societies, advances in medical sciences, and the growing incidence of cancer have significantly increased the demand for medical care. One of the areas most affected by these trends is palliative care provided both in inpatient settings and at home. In Poland, approximately 100,000 people died from malignant neoplasms in 2023, accounting for 24.4% of all deaths, and more than 120,000 patients received palliative care services [3]. In this context, not only the availability of palliative care facilities but also the quality of care and the attitudes of healthcare professionals are of key importance.

Nurses play a central role in end-of-life care, spending more time at the bedside than any other professional group [4]. They are expected to combine adequate knowledge and clinical competencies with an empathetic, respectful and patient-centred approach toward dying patients and their families. Understanding the process of dying and the circumstances in which patients and families find themselves requires viewing dying as a natural stage of life and providing support aligned with patients' needs and preferences. Developing such an approach presupposes not only the acquisition of technical skills but also the formation of appropriate attitudes and interpersonal competencies during undergraduate training [1].

To date, several studies have been performed on nursing students' attitudes toward dying patients. Their results indicate that although students generally express positive attitudes, they often feel insufficiently prepared and experience emotional discomfort when confronted with dying patients [5, 6]. Both structured palliative care education and clinical exposure have been shown to improve attitudes, preparedness, and confidence in providing end-of-life care [7, 8]. Longitudinal evidence further suggests that students' attitudes evolve throughout their education and are shaped by both theoretical instruction and clinical experience [9]. In Poland, nursing students' attitudes toward caring for dying patients have not been systematically investigated, particularly with regard to the influence of undergraduate education on these attitudes. Furthermore, there is a paucity of comprehensive data concerning students' perceived educational needs in end-of-life care.

The Frommelt Attitudes Toward Care of the Dying Scale Form B (FATCOD-B) is one of the most widely used instruments to assess attitudes toward caring for dying patients. The original questionnaire

consists of 30 items covering both positive and negative aspects of end-of-life care attitudes [10]. It has been applied in numerous countries, including Italy, Sweden, Switzerland, Spain, Turkey, the United Kingdom, India, China and the United States [11]. To improve feasibility while maintaining sound psychometric properties, several shortened versions have been proposed. Among them, the 9-item questionnaire developed by Molinengo et al. demonstrated acceptable reliability and internal consistency [12]. A Polish version of this 9-item FATCOD-B (FATCOD-B-PL), based on the 30-item translation by Sadowska et al.[13], has been validated by our team [14].

Against this background, we aimed to assess the influence of an undergraduate palliative care training program on nursing students' attitudes toward caring for dying patients, as measured by the 9-item FATCOD-B-PL. In addition, we explored students' perceived educational needs in end-of-life care using an author-developed survey.

Materials and methods

Participants

All third-year undergraduate nursing students at the College of Medical Sciences in Toruń, WSG University in Bydgoszcz, enrolled in the 2024/2025 academic year, were invited to participate in the study before the start of the palliative care course. Participation was voluntary and anonymous. All students provided informed consent prior to inclusion. The authors obtained a Statement from the Chairman of the Bioethics Committee at Poznan University of Medical Sciences, which confirmed that this study "does not bear the characteristics of a medical experiment and, in accordance with the law and Good Clinical Practice, is not subject to the Bioethics Committee's review" — number KB-834/23 issued on October 25, 2023.

Study procedure

Immediately before and after completing the 3-week curriculum-based undergraduate course, students completed a self-administered paper-and-pencil 9-item FATCOD-B-PL questionnaire, which was delivered by the researchers (W.K., E.D.S.). Prior to completing the questionnaire, participants were informed about the voluntary nature of their participation, the purpose of the study, and its procedure. Completing a single questionnaire took approximately 10 minutes. Only fully completed questionnaires were included in the analysis. Baseline FATCOD-B-PL scores from this cohort were also used in our previous validation study of the questionnaire. In addition, immediately after completing the course, students filled in an author-developed 15-item survey assessing their educational needs in end-of-life care.

Curriculum-based undergraduate course

According to the national educational standards in force since the 2019/2020 academic year, undergraduate nursing curricula in Poland must include palliative care, with defined learning outcomes for both knowledge and skills. These competencies are to be acquired through theoretical classes (lectures, seminars) and practical training (skills classes and clinical placements). Practical training in palliative care comprises a minimum of 80 hours, whereas the number of theoretical hours is not specified and remains at the discretion of each university.

At WSG University, the palliative care course is delivered in the fifth semester of the nursing program. During the study period, it consisted of 25 hours of lectures, 10 hours of self-study, 40 hours of practical classes and 40 hours of clinical placement. Within the framework of the “Monoprofile Medical Simulation Centre” project, the curriculum was supplemented with 4 hours of high- and medium-fidelity simulation. Simulation sessions were based on pre-prepared scenarios and focused particularly on the development of students’ soft skills, including interpersonal communication.

The course was embedded in the standard undergraduate nursing curriculum and aligned with national educational standards, ensuring ecological validity for nursing education.

During the course, students acquired knowledge about: (1) etiopathogenesis, clinical presentation, course, treatment, prognosis and nursing care principles for patients requiring palliative care; (2) principles of assessment and planning of nursing care in palliative care; (3) organization of palliative care services; and (4) nursing standards and procedures used in the care of patients at the end of life. They also developed practical skills such as: (1) providing enteral and parenteral nutrition; (2) conducting therapeutic conversations; (3) communicating relevant clinical information to members of the multidisciplinary team; (4) assessing pain and other symptoms, and implementing pharmacological and non-pharmacological symptom management; (5) caring for the body after death in accordance with established protocols; and (6) preparing and administering medications via various routes, independently or on a physician’s order. In simulation classes, students participated in 10–15-minute scenarios in which they performed typical tasks of palliative care nurses, such as pain assessment, administration of analgesics, assessment and management of nausea, vomiting and constipation, and implementation of comfort measures. While performing these activities, they were expected to establish professional contact with the patient and conduct conversations addressing symptoms, mood and fears related to disease progression.

Polish 9-item Frommelt Attitudes Toward Care of the Dying Scale (FATCOD-B-PL)

The Polish short version of the FATCOD-B questionnaire (FATCOD-B-PL) has been described in detail and validated in our previous study [13]. It was developed on the basis of the 30-item FATCOD-B translation and validation by Sadowska et al. [14] and the 9-item Italian version proposed by Molinengo et al. [12]. The total FATCOD-B-PL score ranges from 9 to 45, with higher scores indicating more positive attitudes toward caring for dying patients and their family members.

The respondent information section collected data on students' age, sex, religious denomination, perceived influence of religious beliefs (or lack thereof) on their attitudes toward care of the dying, previous education about death and dying, personal and professional experience in caring for a dying person, and past or current experience of loss of a close relative. All data were anonymized.

The authors obtained a statement from the Bioethics Committee at Poznan University of Medical Sciences confirming that the study "does not bear the characteristics of a medical experiment and, in accordance with the Polish law and Good Clinical Practice, is not subject to the Bioethics Committee's review" (decision no. KB-834/23, issued on October 25, 2023). The study was conducted in accordance with the principles of the Declaration of Helsinki.

Assessment of educational needs

Educational needs regarding care for dying patients were assessed using a 15-item questionnaire developed by the authors. Questionnaire was developed for this study and has not been previously published (see Supplementary Table S1). The items addressed students' perceived overall knowledge of end-of-life care, skills considered essential in this area and their importance for future nursing practice, opinions on the educational program conducted by the College of Medical Sciences in Toruń, and perceived effectiveness of specific teaching methods. Further items explored which aspects of end-of-life care should be strengthened during undergraduate training, with particular emphasis on additional clinical placements, collaboration with palliative care facilities and opportunities for extracurricular courses in palliative care, as well as availability of educational materials. Finally, students were asked whether they intended to work in end-of-life care after graduation.

Statistical analysis

Statistical analysis was performed using STATISTICA 13.0 (StatSoft, Poland). FATCOD-B-PL scores were summarised as mean ± standard deviation (SD) and median values with interquartile ranges [Q1, Q3], whereas categorical variables were presented as numbers and percentages.

To evaluate longitudinal change in attitudes toward end-of-life care, we analysed FATCOD-B-PL scores obtained before and after the educational program. Given moderately skewed distributions, the primary pre–post comparison used the Wilcoxon signed-rank test. In addition, a linear mixed-effects model was fitted as a complementary analysis to account for repeated measurements and adjust for covariates. The participant was included as a random intercept, while time (before vs. after the educational program) was included as a fixed effect, along with age, sex, and selected background variables. To explore whether the magnitude of change depended on baseline attitudes, the baseline FATCOD-B-PL score and its interaction with time were added to the model; a significant negative time × baseline interaction indicated greater improvement among participants with lower initial scores. Model assumptions were evaluated by inspection of residual and Q–Q plots to assess normality and homoscedasticity. Effect sizes were expressed as Cohen's dz values (standardized mean differences for

dependent samples), and 95% confidence intervals were estimated. All tests were two-tailed with a significance level of $\alpha = 0.05$.

Results

Study sample

In the 2024/2025 academic year, 124 third-year undergraduate nursing students were enrolled at the College of Medical Sciences in Toruń. Of these, 113 (91.1%) consented to participate in the study. Twelve questionnaires (10.6%) were incomplete and were excluded from the analysis. The final sample comprised 101 students, representing 81.5% of all third-year nursing students in that academic year.

The mean age of participants was 35.2 ± 7.6 years. The vast majority were female (n = 85; 84.2%) and identified as Catholic (n = 90; 89.1%). Among believers, three quarters reported that their religious beliefs had a strong (n = 29; 32.2%) or moderate (n = 40; 44.4%) influence on their attitudes toward care of the dying. Among students who declared no religious affiliation or identified as atheists (n = 11; 10.9%), only two (18.2%) reported a moderate influence of these views on their attitudes, and none indicated a strong influence.

Two-thirds of participants had previously received some form of education about death and dying: 4 students (4.0%) had attended a dedicated course on this topic, and 67 (66.3%) had participated in a course that included related content. A similar proportion (n = 58; 57.4%) reported prior experience in caring for a person who was dying. Most students (n = 85; 84.2%) had experienced the loss of a close relative. Three participants reported having a close relative with a current end of life illness, and two anticipated the imminent death of a loved one.

Attitudes toward caring for dying patients: 9-item FATCOD-B-PL results

Table 1 summarises FATCOD-B-PL (9-item) total scores before and after the curriculum-based undergraduate course (n = 101). The mean total score increased from 32.1 ± 3.9 to 33.9 ± 4.2 (Wilcoxon signed-rank test, $p = 0.0002$), indicating a small-to-moderate improvement in attitudes toward caring for dying patients. In a complementary linear mixed-effects model, improvement was greater among students with lower baseline scores (time × baseline interaction: $\beta = -0.42$; $p < 0.05$).

In exploratory item-level analyses, four items (3, 8, 11, and 26; item numbers refer to the original 30-item FATCOD version) showed statistically significant increases in mean scores, while no item showed a statistically significant decrease.

Table 1
Results of the 9-item FATCOD-B-PL before and after the curriculum-based undergraduate course in the study sample (n = 101).

Item*	Before educational program mean ± SD median (Q1, Q3)	After educational program mean ± SD median (Q1, Q3)	P value
3. I would feel awkward talking about death with a dying person.	3.3 ± 0.8 3 (3, 4)	3.6 ± 0.8 4 (3, 4)	0.0005
5. I would not want to have to care for a dying person.	3.9 ± 0.8 4 (3, 4)	3.9 ± 0.9 4 (3, 5)	Ns
6. Nurses should not discuss death with a dying person.	4.0 ± 0.8 4 (4, 5)	4.1 ± 0.8 4 (4, 5)	Ns
8. I would be worried if a dying person I provide care to lost hope for health status improvement.	2.6 ± 0.9 2 (2, 3)	3.0 ± 1.1 3 (2, 4)	0.0013
9. It is difficult to establish a close relationship with the family of a dying person.	3.5 ± 0.9 4 (3, 4)	3.5 ± 0.9 4 (3, 4)	Ns
11. When a person asks, 'Am I dying?' I think it is best to change the subject into a cheerful one.	3.8 ± 0.7 4 (3, 4)	4.1 ± 0.8 4 (4, 5)	0.0042
14. I am afraid to become friends with a dying person.	3.7 ± 0.8 4 (3, 4)	3.8 ± 0.8 4 (3, 4)	Ns
15. I would rather run away than witness actual dying.	4.0 ± 0.6 4 (4, 4)	4.1 ± 0.8 4 (4, 5)	Ns
26. I would feel uncomfortable if I entered a dying person’s room and found him/her crying.	3.4 ± 0.9 4 (3, 4)	3.7 ± 0.9 4 (3, 4)	0.0078
Total score	32.1 ± 3.9 32 (29, 35)	33.9 ± 4.2 34 (31, 37)	0.0002

The observed changes suggest that attitudes toward end-of-life care are modifiable educational outcomes and may be particularly responsive among students with lower baseline preparedness.

Longitudinal change in attitudes toward end-of-life care

At the individual level, total scores increased for more than half of the students, remained stable for a small subgroup, and decreased for a minority. Figure 1 shows individual pre–post changes in total scores (spaghetti plot), highlighting heterogeneity in responses.

To account for repeated measurements and adjust for covariates, we fitted a linear mixed-effects model with participant as a random intercept. The linear mixed-effects model indicated a statistically significant overall increase in 9-item FATCOD-B-PL scores over time ($\beta = 1.71$, 95% CI [0.89, 2.54], $p < 0.001$), corresponding to a moderate within-subject effect ($dz \approx 0.4$). The improvement remained significant after adjusting for age, sex, and other background variables. The direction and statistical significance of the effect were consistent with the Wilcoxon signed-rank test.

Assessment of the educational needs

More than half of the students rated their overall knowledge about end-of-life care as good or very good, while only a small proportion reported poor knowledge. Almost all participants considered palliative care skills important for their future nursing practice. Approximately one third expressed readiness to work in end-of-life care after graduation, and a substantial proportion believed that caring for dying patients would not pose major difficulties.

Among students intending to work in end-of-life care, the most frequently reported motivations were empathy, the wish to help others, and prior personal or professional experience. In contrast, those not planning to work with dying patients most commonly indicated a preference for other professional fields, while emotional burden and limited experience were less frequently mentioned.

Students most often identified ethical and moral issues, respect for patient autonomy, and communication with patients and families as essential competencies in end-of-life care. Practical training was regarded as the most effective educational method, followed by interactive forms such as workshops, case discussions, and simulations, whereas lectures were considered less effective. Most students emphasized the importance of collaboration with palliative care facilities to develop practical competence.

Only a minority of students believed that the current undergraduate curriculum provided sufficient preparation in end-of-life care, and many were uncertain in this regard. More than half indicated that the curriculum should be expanded, particularly in areas related to psychological support, symptom management, and communication. Educational needs were reported mainly in the domain of practical skills, with fewer students indicating needs related to interpersonal competencies and only a small proportion identifying gaps in theoretical knowledge.

A considerable proportion of students expressed interest in additional clinical placements in end-of-life care, and most supported the availability of additional palliative care training outside the core curriculum. At the same time, many respondents were uncertain whether existing educational materials in this area were sufficient.

Detailed results are provided in Supplementary Table S2.

Discussion

In this single-centre study, third-year undergraduate nursing students showed a statistically significant improvement in attitudes toward caring for dying patients after completing a structured palliative care course that included clinical placement and simulation. We observed a significant increase in mean 9-item FATCOD-B-PL scores, corresponding to a small-to-moderate within-subject effect. This positive change was consistent across unadjusted pre–post comparisons and covariate-adjusted mixed-effects modelling. However, the improvement was not uniform: while most students' scores increased, a minority showed declines, and a small subgroup remained unchanged.

The direction of change is consistent with earlier studies of palliative care education using FATCOD(-B) outcomes. Berndtsson et al. reported improved FATCOD scores after a palliative care course in Sweden [8]. Similar findings were reported in China for an educational programme that included simulation and improved FATCOD-B scores [15]. Practice-oriented elements may be one reason for these effects; in our course, students had both clinical placement and simulated encounters. In our sample, notable gains were observed in items related to communication about death ("soft skills"; items 3 and 11), indicating a reduction in discomfort with difficult end-of-life conversations [16, 17].

A noteworthy feature was the between-student variability in change scores. The significant negative interaction between time and baseline scores indicates that students with the lowest initial FATCOD-B-PL scores derived the greatest benefit from the program. In contrast, some students showed stable or decreased scores after the course. Attitudes are typically conceptualized as comprising three interrelated components: cognitive (beliefs or thoughts), affective (e.g. fear, empathy, admiration) and behavioural (e.g. willingness to provide care, avoidance) [18]. All components influence one another: an increase in knowledge may lead to changes in behaviour or emotional responses. Attitude may also correlate with an individual's fear of death, understood as a dispositional trait. Fear of death has been shown to adversely affect caregivers' attitudes toward palliative care, contributing to less favourable perceptions and potentially limiting their readiness to engage in end-of-life care [19]. Therefore, rather than indicating a deterioration of attitudes, the decreases in FATCOD-B-PL scores observed in some participants may reflect a response shift: confronting real or simulated end-of-life situations can lead to a more realistic self-evaluation of one's competencies and to a greater awareness of the emotional and ethical complexity of palliative care. Previous research has shown that nursing students frequently experience helplessness and sadness during their first encounters with patient death, and that these experiences may prompt critical reflection on their own readiness for end-of-life care [16, 20]. From an educational perspective, this pattern may be as meaningful as a uniform increase in mean scores, as it suggests a deeper reappraisal of personal values, fears and ethical responsibilities.

Personal experience with death is often considered an important factor in shaping professional attitudes. In our cohort, most students had experienced the loss of a close relative, and more than half

reported previous caregiving experience with a dying person. Such experiences may contribute to the development of coping strategies and empathy; however, in our analysis they did not significantly modify the degree of change in FATCOD-B-PL scores. This suggests that a structured educational program may exert a broadly positive influence regardless of prior exposure to death and dying and supports the notion that palliative care education should be mandatory for all nursing students, not only those with limited personal experience [21].

The survey on educational needs provides further insight into how students perceive their preparation for end-of-life care. Although more than half rated their knowledge as good or very good, nearly 60% were uncertain whether the current curriculum provided sufficient skills. Students identified ethical issues and respect for patient autonomy as the most essential competencies, which aligns with the fundamental principles of medical ethics [22]. They also emphasised communication with patients and families and psychological support, and clearly favoured practice-oriented teaching methods such as clinical placements, workshops, case discussions and simulations over traditional lectures [23]. These preferences echo reports from other settings, where nursing students describe feeling insufficiently prepared for the ethical and communicative challenges of end-of-life care despite recognizing its importance [24]. The prominence given to ethical issues and autonomy is also compatible with the concept of moral distress, whereby healthcare professionals experience internal conflict when they are unable to act in accordance with what they consider to be the right course of action [24, 25]. Attitudes toward death appear to partially mediate the association between moral distress and palliative care competencies, suggesting that efforts aimed at alleviating moral distress and fostering more adaptive, reflective perspectives on death may strengthen clinicians' preparedness for end-of-life care [26]. Although we did not directly assess moral distress, our findings support the integration of ethics, communication and psychological support as core components of palliative care curricula, combined with structured opportunities for reflection and debriefing [27].

Strengths and limitations

We assessed attitudes using the validated 9-item FATCOD-B-PL [13], which was sufficiently brief to be used in our part-time nursing cohort without adding substantial respondent burden. The intervention was a defined, curriculum-based course aligned with current national standards and combined theoretical content with practice-oriented elements, including simulation (with structured debriefing) that covered both symptom management and communication with patients and families. The participation rate was high, and we analysed pre–post change using a linear mixed-effects approach, which allowed us to account for baseline differences between students and use all available observations.

As an educational evaluation study embedded in routine curriculum delivery, the primary aim was to assess change over time rather than causal inference. This design reflects real-world constraints of undergraduate nursing education and enhances transferability to similar educational settings. However, the study was conducted in a single academic centre in Poland, which may limit transferability to other institutional and cultural contexts. We measured attitudes immediately after the course; whether the

observed change persists beyond the end of teaching remains unknown. The sample was relatively mature (mean age 35.2 years) and largely female and Catholic, which may reduce transferability to younger or more diverse student groups. FATCOD-B-PL captures declared attitudes rather than behaviour, so we cannot infer changes in clinical conduct. Using the 9-item version improved feasibility, but it covers fewer domains than the original 30-item scale and may miss subtle, domain-specific shifts. Finally, baseline FATCOD-B-PL data from this cohort were previously used in a validation study [13]; although the current analyses address a different question, this partial reuse should be kept in mind.

Implications for undergraduate nursing education

The effect on 9-item FATCOD-B-PL was small-to-moderate ($d_z \approx 0.4$) and largely confined to students with lower baseline scores, suggesting that palliative-care content may be most efficient when introduced earlier and reinforced repeatedly rather than delivered as a single block. Mean change also concealed meaningful heterogeneity; future evaluations should predefine and report responder profiles (improved/unchanged/worse), identify predictors, and map trajectories to specific course elements (placement, simulation, debriefing).

Conclusions

This study provides evidence that curriculum-based, simulation-enhanced palliative care education can positively influence nursing students' attitudes and highlight unmet educational needs. These findings highlight the importance of integrating clinical content with communication and psychological support training, as well as practice-oriented educational approaches such as simulation, within undergraduate curricula. They may help inform the development and evaluation of nursing programmes aimed at improving preparedness for end-of-life care.

Declarations

Ethics approval and consent to participate

Participation was voluntary and anonymous. All students provided informed consent prior to inclusion.

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Author Contribution

Author Contributions: Conceptualization: W.K., E. D-Ś.; Methodology: W.K., M. C., E. D-Ś. Formal analysis: M. C.; Investigation: W.K, Data curation: M. C, W.K. Writing – original draft: W.K E.D-Ś.; Writing – review & editing: W. K., K.J., B. K, K.W-T., E.D-Ś.; Supervision: E. D-Ś.; Project administration: W.K., E.D-Ś, K. W-T.

Data Availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

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Figures

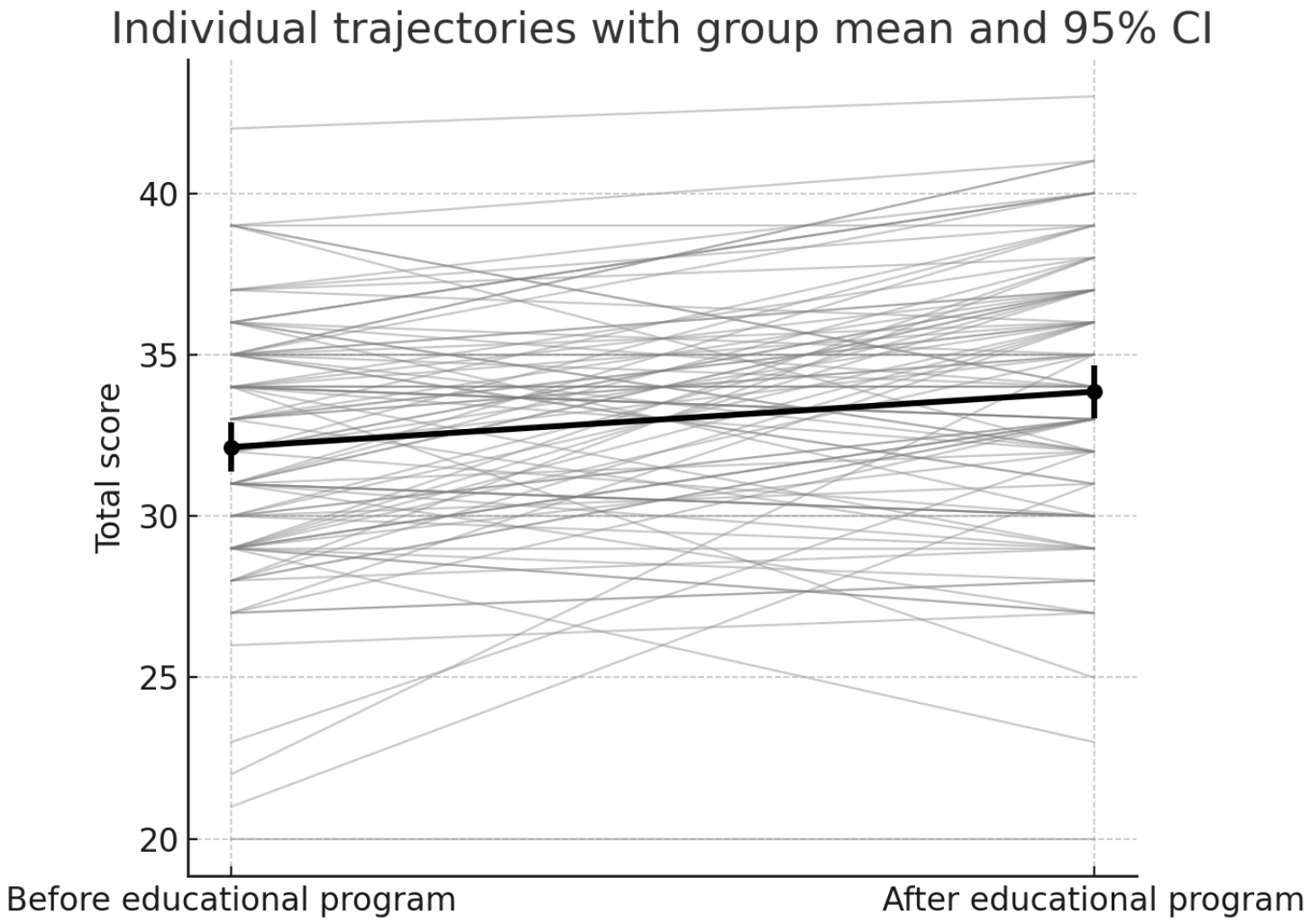


Figure 1

Individual trajectories of 9-item FATCOD-B-PL total score in the study sample (n = 101)

Supplementary Files

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