










Validation of the Italian version of the Secondary Traumatic Stress Scale (STSS-I) within midwifery students

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ABSTRACT

Aim: to evaluate the psychometric properties of the Italian version of the Secondary Traumatic Stress Scale (STSS-I) specifically for midwifery students.

Background: midwives are at risk of developing Secondary Traumatic Stress (STS) which arises from witnessing or hearing about the trauma of others. Midwifery students are particularly vulnerable to STS due to the emotionally intense situations they encounter during their clinical training. This stress impacts their emotional well-being and their professional development. Despite the significant impact of STS on midwifery students, it remains underexplored in academic settings.

Methods: An observational study was conducted enrolling midwifery bachelor students of University of Milano Bicocca and Verona. Reliability and structural validity of STSS-I were studied using Confirmatory Factor Analysis and Cronbach's alpha. Moreover, the criterion concurrent validity was tested using the GHQ-12 as criterion standard through the ROC curve's study. Analysis was performed using Stata/MP18.0 and R (version 4.3.2).

Results: confirming the two-dimension structure, within midwifery students the STSS-I had a good structural validity (RMSEA=0.079, CFI=0.992 and TLI=0.991) and reliability (Arousal subscale's and Intrusion's Cronbach alpha were respectively 0.90 and 0.84). The criterion validity demonstrated a moderate level of accuracy (AUC 0.75 ± 0.06). The total average STSS-I score was 24.44 (DS=9.91), ranging from 15 to 68. The average of Arousal and Intrusion subscales were respectively 17.70 and 9.73.

Conclusions: the STSS-I has good psychometric properties, representing a valid and reliable measure for assessing STS within midwifery students.

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1. Introduction

Secondary Traumatic Stress (STS) is a psychological condition defined by Figley as "the natural behaviors and emotions that arise from knowing about a traumatizing event experienced by a significant other—the stress resulting from helping or wanting to help a traumatized person" (Figley, 1995). It is characterized by symptoms such as hyperarousal, avoidance and intrusive memories, which are similar to those found in Post-Traumatic Stress Disorder (PTSD). However, while PTSD results from direct exposure to trauma, STS arises from witnessing or hearing about the trauma of others, often within an empathic caregiving relationship (Mordeno et al., 2017).

Healthcare professionals, particularly those working in emotionally charged settings like midwives, are at risk of developing STS as "secondary victims"—individuals who, although not directly involved in the traumatic event, suffer emotional distress as a result of their exposure to patients' trauma (Ravaldi et al., 2022). According to estimates from the literature, about half of those working in healthcare have experienced the phenomenon of 'secondary victim' at least once (McDaniel and Morris, 2020; Nydoo et al., 2020) with a negative impact on their professional as well as personal lives (Aydm and Aktaş, 2021; Elmır et al., 2017; Kendall-Tackett and Beck, 2022; Pougnet et al., 2020). Studies also highlight the prevalence of STS in midwifery care. For instance, a study of maternal-newborn nurses revealed that 24–29 % reported high to severe levels of STS, with intrusive recollections being the most common symptom (Beck, 2020). In midwifery care, where complications, neonatal deaths, or unexpected outcomes may occur, midwifery students can experience significant emotional strain, leading to STS (Elmır et al., 2017; Kendall-Tackett and Beck, 2022; Pougnet et al., 2020). Bayri Bingol and colleagues (Bayri Bingol et al., 2021) carried out a descriptive study to assess the levels of STS among fourth-year midwifery students (mean age = 21.6 ± 1.1 ; all females) in Istanbul while also identifying the factors that may affect these levels. The results showed that 22.2 % of midwifery students fulfilled all the trauma criteria for posttraumatic stress disorder according to the Secondary Traumatic Stress Scale (Bride et al., 2004; Yildirim et al., 2018). Furthermore, as fear of managing labor increases, STS scores also rise, indicating a moderate positive correlation between these two variables.

Midwifery students are particularly vulnerable to STS due to the emotionally intense situations they encounter during their clinical training. These students often face a "culture shock" as they transition from idealized expectations of the profession to the harsh realities of midwifery care, including traumatic events such as neonatal deaths or complex birth complications (Cummins et al., 2014). Factors such as dissatisfaction with their training, fear of managing labor, or perceptions of the delivery room as dangerous are associated with higher levels of STS (Bayri Bingol et al., 2021).

Some of the traumatic events experienced and reported by the students are: not feeling part of the team, not feeling welcome, the perception that women receive poor quality care or inadequate interventions (Bayri Bingol et al., 2021; Cummins et al., 2014; Davies and Coldridge, 2015; McCarthy et al., 2018; Rezaei et al., 2020). In some cases, it seems that the student tends to feel closer to the woman than to the healthcare professionals themselves, establishing deep empathic relationships (Coldridge and Davies, 2017). Finally, emergencies that may occur in the delivery room or unexpected/unanticipated outcomes such as the death of a newborn baby, are reported as traumatic events (Cummins et al., 2014; Alghamdi and Jarrett, 2016). In these situations, students report feeling unprepared for the change of pace required and overwhelmed by the role they were assigned (Davies and Coldridge, 2015).

The impact of such stress can be profound, affecting not only their emotional well-being but also their professional development and ability to engage in caregiving (Bayri Bingol et al., 2021; Davies and Coldridge, 2015). Students who feel unprepared for the emotional demands of the profession are particularly vulnerable to STS, which can manifest

as intrusive thoughts, crying, nightmares, feeling flashbacks and reliving the traumatic event (Davies and Coldridge, 2015; McKenna and Rolls, 2011), rather than a desire to move away and avoid the clinical placement (McKenna and Rolls, 2011) or a fear of attending places associated with the traumatic event (McCarthy et al., 2018). These symptoms may lead to maladaptive coping behaviors, such as substance use or withdrawal from clinical placements, which can further impair their ability to provide effective patient care (Davies and Coldridge, 2015).

Despite the significant impact of STS on midwifery students, the phenomenon remains underexplored in academic settings. The Secondary Traumatic Stress Scale (STSS) is the only tool currently available in Italian for assessing Secondary Traumatic Stress. Originally developed by Bride in 2004 (Bride et al., 2004), it was translated and validated into Italian by Setti and Argentero in 2012, specifically for a population of healthcare workers in ambulance services (Setti and Argentero, 2012). This version of the scale has since been used in various healthcare contexts, but it has not yet been validated for midwifery students. This study aims to evaluate the psychometric properties of the Italian version of the Secondary Traumatic Stress Scale (STSS-I) specifically for midwifery students, addressing a critical gap in the literature and providing a reliable tool to assess STS in this vulnerable population of secondary victims.

2. Materials and method

2.1. Study design

An observational study was undertaken to assess the psychometric characteristics of STSS-I within midwifery students. This study was performed by a multidisciplinary research team (i.e., midwives, clinical psychologists) belonging to the University of Verona and the University of Milano Bicocca, which had previous experience of psychometric scale cross-cultural adaptation and validation (Fumagalli et al., 2022; Nespoli et al., 2018, 2021, 2024) and large experience in the context of emotional distress and wellbeing for midwifery staff (Del Piccolo et al., 2021; Donisi et al., 2022).

2.2. Participants and recruitment

Midwifery bachelor students at the University of Milano Bicocca and Verona were enrolled. The study included students undertaking the third year who have at least a training experience in the delivery room. No exclusion criteria were used for this study. The study's participants were recruited from the universities involved in the study, who acted as gatekeepers. The research team forwarded to the potential participants an informative email with an information sheet and the link to access the informed content and the survey. Participants completed the anonymous questionnaires using an online platform, "Google Forms" platform.

2.3. Settings

Midwifery Italian students should fulfill their educational program equal to 180 university credits during at least three years of bachelor university. The educational program is composed of theoretical and practical aspects that are strictly defined by Italian law: one credit of theoretical activity is equal to 15 hours of lessons and 10 hours of personal study, while one university credit of practical activity is formed by 30 hours of training experience (Ministero dell'istruzione dell'università e della ricerca, 2004).

The Italian National Healthcare System (NHS) guarantees to all Italian citizens free-of-charge care and equal access during childbirth. Maternity services in Italy are mostly in obstetric-led units, with only a few midwifery-led units (Battinelli et al., 2023). Perinatal care of high-risk pregnant women should be offered in II level Maternity Units, obstetric-led units with higher birth volume (≥ 1000 births/year) and defined by specific organizational, structural and technical standards

according to Italian law (Ministero della salute. Accordo stato regioni. 2010). Healthy pregnant women can ideally choose the place of birth, midwifery-led units or obstetric-led units including I and II level Maternity Units.

2.4. Instrument

The Secondary Traumatic Stress Scale (STSS) was developed in the USA by Bride and colleagues (Bride et al., 2004) to measure the secondary trauma symptoms within social workers; it evaluates intrusion, avoidance and arousal symptoms resulting from indirect exposure to trauma. It was a 17-item and self-reported instrument composed of 3 dimensions, intrusion, avoidance and arousal, that measures the frequency of the described symptoms. The aspect that characterizes STSS, differing from other scales that measure Post Traumatic Stress Disorder (PTSD), is the design of some items where the traumatic stressor is identified as exposure on the client and not on the subject (Bride et al., 2004). The STSS was translated and validated in the Italian context within health-care professionals (HCPs) (Setti and Argentero, 2012); the process allowed the identification of the STSS-I (Italian version of STSS) composed of 15 items and 2 dimensions, arousal and intrusion. They deleted 2 items: "I avoided people, places, or things that reminded me of my work with clients" (Item 12) and "I had disturbing dreams about my work with clients" (Item 13). The arousal subscale of STSS-I is composed of Item 1, 4, 5, 7, 8, 9, 11, 15 and 16, while the Intrusion subscale is composed of Items 2, 3, 6, 10, 14 and 17. The original and translated items are fully reported respectively in Table 1 and Supplementary material 1. The questionnaire has a 5-point Likert scale, 1 'Never' and 5 'Very Often', that describes the frequency of the symptoms defined in each item perceived by participants during the 7 days before the compilation of the STSS-I.

The research team decided to use the General Health Questionnaire composed of 12 items (GHQ-12) as the criterion standard to evaluate the criterion validity of the STSS-I. The General Health Questionnaire and the shorter and validated version composed of 12 items (GHQ-12) are widely used to screen minor psychiatric disorders (Piccinelli et al., 1993). The GHQ-12 was translated and adapted in the Italian context (Piccinelli et al., 1993); the questionnaire has a 4-point Likert scale, 1 'Not at all' 4 'Much more than usual', that collapses in a dichotomous score, 1 or 2 equal to 0 and 3 or 4 equal to 1. A total score of GHQ-12 equal to or higher than 3 is correlated with the presence of minor psychiatric disorders (Piccinelli et al., 1993).

The survey used in the study was composed of the STSS-I and the GHQ-12. Some information about socio-demographic information of participants, age and information about the participant's experience in the delivery room were explored. Specifically, the number of weeks of experience in the delivery room during the third year and the organizational settings of the delivery room (i.e. I level maternity unit versus II Level maternity unit) were explored.

2.5. Sample size calculation

A minimum of 10 participants for each item belonging to the largest subscale is necessary to evaluate reliability and validity of a subscale (Barton and Peat, 2014); considering STSS-I, the Arousal subscale is

Table 1
distribution of socio-demographic characteristics of study participants.

	Mean	SD
Age	23.16	2.07
N° of weeks worked in delivery room	11.89	5.52
	n	%
I level Maternity Units	20	21.28
II level Maternity Units	71	75.53
Other settings	3	3.19
GHQ-12 ≥ 3	27	28.72

composed of 9 items defining a sample size of 90 participants.

2.6. Statistical analysis

Sample characteristics' distribution was described using mean and standard deviation (SD) for continuous variables and frequencies and percentages for categorical ones.

The structural validity of STSS-I was evaluated through the confirmatory factorial analysis (CFA), while the criterion validity was checked using the ROC curves analysis. The CFA was used to check the validity of the structure described by the authors who adapted the instrument in the Italian context within healthcare operators (Setti and Argentero, 2012). To evaluate the structural model, fit indices were performed; absolute fit measures and incremental fit measures were evaluated. Within absolute fit measures, we performed Chi-square, which results weaker when the sample size and the number of items increase (ideal threshold value >0.05) and Root Mean Square Error of Approximation (RMSEA), which is considered the best informative fit index (optimal threshold value >0.07). Considering the incremental fit indices, we computed the Comparative Fit Index (CFI), which takes care of small sample size (ideal threshold value >0.90 and >0.95 for small sample size) and the Tucker-Lewis Index (TLI), which is not affected by the sample size (ideal threshold value >0.90) (Dash and Paul, 2021). We performed the Confirmatory Factor Analysis using a Diagonally Weighted Least Squares (DWLS) estimator, which is recommended for questionnaires with ordinal items, such as the Likert scale.

Moreover, we conducted a criterion validity analysis. The criterion validity evaluated how much an instrument adequately reflects a gold standard; specifically, we performed a concurrent validity where the instrument and gold standard are used to evaluate a present condition (Mokkink et al., 2019; De Vet et al., 2011). We decided to use the GHQ instrument criterion standard, which described the presence/absence of significant psychological distress. The ROC curve analysis is recommended to perform the criterion validity for an instrument with ordinal values using a dichotomous gold standard instrument, as GHQ-12 (Mokkink et al., 2019; De Vet et al., 2011); the Area Under the Curve (AUC) represents the probability that the instrument tested yielded a higher value for a random individual choose within the suffering group than for a randomly individual not in the suffering group (Pintea and Moldovan, 2014). The accuracy of a test is considered low if the AUC is between 0.50 and 0.70, moderate if the AUC is between 0.70 and 0.90 and high if it is higher than 0.90 (Pintea and Moldovan, 2014).

Then, the internal reliability of the STSS-I was evaluated, performing Cronbach's alpha for both the studied dimensions confirmed by the CFA. Statistical analyses were performed using Stata/MP 18.0 and R (version 4.3.2).

2.7. Ethical consideration

The recruitment of the participants began after receiving ethical approval from University of Milano Bicocca Ethics Committee, numbered 694 and dated 9/05/2022. A participant information sheet and information consent were obtained for all the participants prior to the compilation of the questionnaires; moreover, they could stop to complete the questionnaires and quit the study at any point during the compilation without any explanation. Participation was voluntary. The completion of the online questionnaires was anonymous and personal identifiers were not collected. All data were held in confidence under password-protected systems.

3. Results

3.1. Description of the sample's characteristics

The study enrolled 94 participants in the third year of the midwifery bachelor's degree. The participants' age's mean was 23.16 (SD 2.07),

while the mean of weeks worked in the delivery room during the third year of bachelor's degree was 11.89 (SD 5.52). Considering the hospitals' organizational characteristics where the participants worked, 21.28 % (n = 20) were in I level Maternity Units, 75.53 % (n = 71) in II level Maternity Units and 3.19 % (n = 3) in other settings. Of the participants, 28.72 % (n = 27) had clinically significant psychological distress according to GHQ-12 (≥ 3).

3.2. Psychometric characteristic of STSS-I

The Confirmatory Factor Analysis of the STSS-I structure validated by the Italian researchers (Setti and Argentero, 2012), using the DWLS estimator, allowed us to evaluate the structural validity of the instrument through the computation of model parameter estimates (Fig. 1) and fit indices. Except for the Chi-square (=6528.823, p-Value<0.001), all the parameters evaluated demonstrated a good fit of the model tested: RMSEA= 0.079, CFI= 0.992 and TLI= 0.991.

Considering the criterion validity, the AUC of the STSS-I using the GHQ as the criterion standard is equal to 0.75 (SD 0.06). According to Pintea et al (Pintea and Moldovan, 2014), the STSS-I had moderate accuracy in identifying the presence of significant psychological distress. The reliability of the subscale was evaluated in both the dimensions of the questionnaire: Cronbach alpha of Arousal subscale was equal to 0.90, while the Intrusion subscale's Cronbach alpha was equal to 0.84.

3.3. STSS-I

The distribution of Likert scale values for each item was fully described and represented in Table 1. The item that participants described more frequently as 'Often' or 'Very often' perceived was "I felt jumpy" (20.21 %, n = 21). None of the participants described the item "I had little interest in being around others" as perceived as 'Often' or 'Very often'.

The average total score of STSS-I was 27.43 (DS=9.91), ranging from 15 to 68. The average of the Arousal subscale was 17.70 (ranging from 0 to 39) and the Intrusion subscale was 9.73 (ranging from 6 to 29) (Table 2). Stratifying for hospital organizational characteristics, STSS-I's average of participants who were in II Level Maternity Units was higher than the who were in I Level Maternity Units (II Level 28.07 ± 10.48 versus I Level 25.3 ± 8.24).

4. Discussion

The overall aim of the current research was to contribute to the validation of the Italian version of the Secondary Traumatic Stress Scale (STSS-I) in a sample of Italian students enrolled in the third year of a bachelor's degree program in midwifery. Specifically, this study aimed to assess the psychometric properties of the STSS-I.

The Confirmatory Factor Analysis (CFA) indicated that the STSS-I maintains a good structural validity, with strong fit indices, suggesting that the adapted scale effectively measures the constructs of arousal and

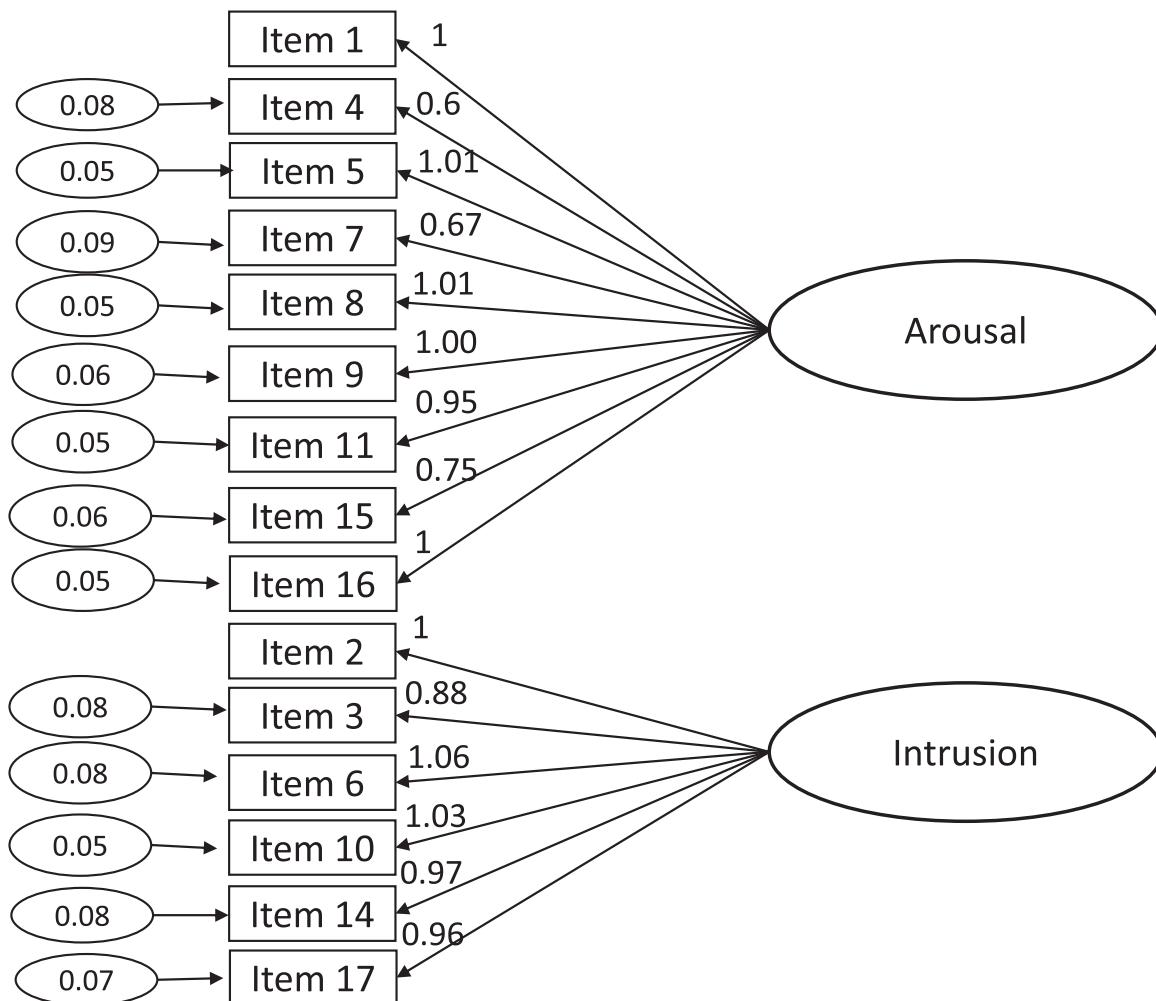


Fig. 1. Factor structure of STSS-I computed from Confirmatory Structural Analysis. The items are numbered using the original number of the English version of STSS (Bride et al., 2004).

Table 2
distribution of Likert scale values for each item of the STSS-I (the maximum percentages are in bold).

Item n°	English translation of STSS-I	Never (1)		Rarely (2)		Occasionally (3)		Often (4)		Very often (5)	
		n	%	n	%	n	%	n	%	n	%
1	I felt emotionally numb	32	34.04	34	36.17	18	19.15	6	6.38	4	4.26
2	My heart started pounding when I thought about my work with clients	40	42.55	31	32.99	14	14.89	6	6.38	3	3.19
3	It seemed as if I was reliving the trauma(s) experienced by my client(s)	66	70.21	19	20.21	6	6.39	3	3.19	0	0.00
4	I had trouble sleeping	32	34.04	40	42.55	9	9.57	8	8.51	5	5.33
5	I felt discouraged about the future	42	44.66	26	27.66	17	18.09	5	5.33	4	4.26
6	Reminders of my work with clients upset me	73	77.66	17	18.09	3	3.19	1	1.06	0	0.00
7	I had little interest in being around others	79	84.05	14	14.89	1	1.06	0	0.00	0	0.00
8	I felt jumpy	9	9.57	43	45.74	23	24.47	14	14.89	5	5.33
9	I was less active than usual	44	46.81	33	35.11	10	10.64	7	7.44	0	0.00
10	I thought about my work with clients when I didn't intend to	44	46.81	19	20.21	21	22.34	9	9.58	1	1.06
11	I had trouble concentrating	36	38.30	37	39.36	18	19.15	2	2.13	1	1.06
14	I wanted to avoid working with some clients	59	62.77	27	28.72	4	4.26	1	1.06	3	3.19
15	I was easily annoyed	22	23.40	47	50.00	15	15.96	8	8.51	2	2.13
16	I expected something bad to happen	40	42.55	31	32.98	15	15.96	6	6.38	2	2.13
17	I noticed gaps in my memory about client sessions	62	65.96	17	18.09	11	11.69	2	2.13	2	2.13

Table 3
distribution of STSS-I, Arousal subscale and Intrusion subscales in study participants.

	Mean	SD
STSS-I	27.43	9.91
Arousal subscale	17.7	6.48
Intrusion subscale	9.73	4.07

intrusion relevant to STS. The high Cronbach's alpha values further affirm the reliability of the STSS-I, indicating that the scale is a consistent tool for measuring STS in this population.

The evaluation of criterion validity for the STSS-I demonstrated a moderate level of accuracy when identifying significant psychological distress, as indicated by its performance against the GHQ-12, a screening tool previously used to assess the psychological distress of Italian healthcare providers working in the field of obstetrics (Del Piccolo et al., 2021). This suggests that the STSS-I is a reasonably effective tool in recognizing distress levels.

The total average STSS-I score indicates a relatively low level of STS symptoms in this cohort. However, the scores ranged from a minimum of 15 to a maximum of 68, suggesting that while some participants experienced very few symptoms (as indicated by the lower end of the range), others reported a notably higher frequency of symptoms. When examining the two subscales, the average scores indicate a relatively lower level of intrusive symptoms compared with the arousal symptoms, suggesting that our sample may be less frequently troubled by distressing memories or thoughts. Looking at the analysis of individual STSS-I items, the finding that "I felt jumpy" was the most frequently reported symptom indicating an elevated level of arousal among participants, suggesting that it may be a prominent experience in midwifery students' professional training.

Interestingly, the stratification of STSS-I scores revealed higher averages among participants in II Level Maternity Units compared with those in I Level units. This disparity could suggest that exposure to more complex clinical scenarios may contribute to increased stress levels among students. Indeed, a growing body of evidence shows that midwives who are frequently exposed to traumatic perinatal events have a higher risk of developing post-traumatic stress symptoms (Wahlberg et al.; Leinweber et al., 2017; Guzzon et al., 2024). It can be assumed that these situations are more likely to be faced in Level II maternity units, which usually deal with high-risk pregnancies and complex conditions. Future research should aim to explore the specific factors within the II Level Maternity Units that may elevate secondary traumatic stress, as well as the implications of these findings for training programs aimed at fostering resilience and managing stress.

Compared with our findings, the original validation study carried out

by Bride and colleagues (Bride et al., 2004) showed a slightly higher overall mean STSS score in their sample of social workers but a lower mean score in the Arousal subscale. As for the Intrusion subscale, the mean score obtained falls within a similar range to that observed in our research. However, it is necessary to interpret these results with caution in light of the psychometric differences between the STSS (comprising 17 items and three subscales) and the STSS that has been adapted to the Italian context (consisting of 15 items and two subscales).

The validation study in the Italian context of ambulance operators (Setti and Argentero, 2012), on the other hand, revealed considerably lower mean scores in the two subscales than those found in our sample. It can be hypothesized that ambulance rescuers, due to their greater experience and exposure to traumatic events, may be better equipped in terms of coping strategies and, therefore, less prone to STS symptoms. In contrast, undergraduate midwifery students, given their learner status and consequent less expertise, might be more vulnerable. In addition to this, some authors have noted that midwifery students tend to build an intense empathic relationship with the women they assist, which could have a further impact on their reaction to any traumatic perinatal cases (Davies and Coldridge, 2015). It would be interesting to further investigate these issues within the Italian context, for example, by administering the STSS in a sample of professional midwives for comparison with a sample of midwifery students to explore whether such discrepancies in outcomes could be attributable to years of practice and/or expertise. Also, it would be useful to make comparisons with samples of other healthcare career students to explore any differences depending on the specific healthcare profession.

However, when making such a comparison, it must be considered that these different ratings could, at least in part, be influenced by the specific characteristics of each Country's healthcare systems, particular working conditions and specifics related to the various healthcare professionals involved.

Concerning studies exploring the occurrence of STS symptoms among the specific midwifery students' population, Bayri Bingol and colleagues (Bayri Bingol et al., 2021) found a substantially higher average total score on the STSS compared with that observed in our sample. The authors reported STS as a critical concern not only for healthcare professionals but also for students undergoing training in high-stress environments, such as delivery rooms, where students may encounter life-and-death situations that they feel ill-equipped to manage.

With regard to the strategies for coping with the STS, the literature revealed, in particular, the need for students to receive peer support and, thus, to have a safe place to talk with fellow students. Associated with this is the relevance of the relationship with the tutor and/or other professionals present and the support they can provide following an event perceived as traumatic (Cummins et al., 2014; Davies and

Coldridge, 2015; Coldridge and Davies, 2017). In this regard, a central role is also to be placed in training. Indeed, a growing body of evidence emphasizes the necessity of promoting educational initiatives to adequately prepare and support both current and future midwifery professionals in the face of potentially traumatic events encountered in their clinical practice (Yilmaz Sezer et al., 2023; Spiby et al., 2018; Power and Mullan, 2017). In this context, the adapted PreR-POPPY (Programme for the prevention of posttraumatic stress disorder in midwifery) training module emerges as a pivotal educational initiative to prevent the development of post-traumatic stress symptoms within pre-registration midwifery programs (Spiby et al., 2018). It included a series of workshops conducted in several English universities aimed to increase the understanding of traumatic events and psychological reactions, along with the recognition and handling of early signals of distress. This training has been regarded as highly acceptable and beneficial by nearly all students involved, who expressed a strong recommendation for its inclusion in the curriculum. Based on these findings, the authors pointed out how this proactive approach can help foster a culture of support, where discussing emotional impacts is normalized rather than viewed as a sign of weakness, facilitating open conversations about challenges faced in the profession. Regarding the specific Italian context, there is evidence describing positive training experiences focused on communication and emotion-handling skills for students attending medicine schools (Donisi et al., 2022). Conversely, to the best of our knowledge, there appears to be a lack of similar initiatives specifically aimed at students enrolled in midwifery degree programs.

5. Conclusion

The results of the current study showed that the Italian version of the Secondary Traumatic Stress Scale (STSS-I) has good psychometric properties, representing a valid and reliable measure for assessing STS within the midwifery students' specific population. Thus, the scale could be a useful instrument to be used to evaluate potential psychological distress among those students, to identify needs for a dedicated supportive intervention during the initial experiences with the midwifery profession. This can be essential to provide students with the necessary strategies to process difficult experiences in a way that ensures their personal well-being and professional resilience. Using the scale in a larger sample of midwifery students might contribute to the deeper description of the phenomenon in this specific context and might represent the basis to create and promote dedicated training on stress management among midwifery students.

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CRediT authorship contribution statement

Adami Anna: Writing – review & editing, Supervision, Conceptualization. **Donisi Valeria:** Writing – review & editing, Writing – original draft, Validation, Supervision, Methodology, Conceptualization. **Panzeri Maria:** Writing – review & editing, Writing – original draft, Visualization, Methodology, Formal analysis. **Fumagalli Simona:** Writing – review & editing, Writing – original draft, Validation, Supervision, Project administration, Methodology, Conceptualization. **Pellegrini Edda:** Writing – review & editing, Investigation. **Torrenzano Gaia:** Writing – review & editing, Writing – original draft, Project administration, Conceptualization. **Nespoli Antonella:** Writing – review & editing, Project administration, Conceptualization. **De Lucia Annalisa:** Writing – review & editing, Writing – original draft. **Antolini Laura:** Writing – review & editing, Visualization, Methodology, Formal analysis. **Caliari Emma:** Writing – review & editing, Methodology, Investigation. **Lopresti Elio:** Writing – review & editing, Investigation. **Michelerio Virginia:** Writing – review & editing, Investigation. **Bassetti Sabrina:** Writing – review & editing, Methodology, Investigation. **Danza Michelangelo:** Writing – review & editing, Investigation.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.nepr.2025.104342.

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