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BASIC RESEARCH ARTICLE



A programme for the prevention of post-traumatic stress disorder in midwifery (POPPY): indications of effectiveness from a feasibility study

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ABSTRACT

Background: Midwives can experience events they perceive as traumatic when providing care. As a result, some will develop post-traumatic stress disorder (PTSD), with adverse implications for their mental health, the quality of care provided for women and the employing organizations. POPPY (Programme for the prevention of PTSD in midwifery) is a package of educational and supportive resources comprising an educational workshop, information leaflet, peer support and access to trauma-focused clinical psychology intervention. A feasibility study of POPPY implementation was completed.

Objective: This study aimed to identify potential impacts of POPPY on midwives' understanding of trauma, their psychological well-being and job satisfaction.

Method: POPPY was implemented in one hospital site. Before taking part in the POPPY workshop (T1) midwives (N = 153) completed self-report questionnaires, which measured exposure to work-related trauma, knowledge and confidence of managing trauma responses, professional impacts, symptoms of PTSD, burnout and job satisfaction. Measures were repeated (T2) approximately 6 months after training (n = 91, 62%).

Results: Midwives' confidence in recognizing (p = .001) and managing early traumareponses in themselves and their colleagues significantly improved (both p < .001). There was a trend towards reduced levels of PTSD symptomatology, and fewer midwives reported sub clinical levels of PTSD (from 10% at T1 to 7% at T2). The proportion of midwives reporting high and moderate levels of depersonalization towards care was reduced (33% to 20%) and midwives reported significantly higher levels of job satisfaction at T2 (p < .001). Reductions in self-reported stress-related absenteeism (12% to 5%), long-term changes to clinical allocation (10% to 5%) and considerations about leaving midwifery (34% to 27%) were identified.

Conclusions: In conclusion, POPPY shows very positive potential to improve midwives' mental health and the sensitivity of care they provide, and reduce service disruption and costs for trusts. Large-scale longitudinal evaluation is required.

Un programa para la prevención del trastorno de estrés postraumático en el puerperio (POPPY, por sus siglas en inglés): indicadores de la efectividad de un estudio de factibilidad

Antecedentes: las matronas pueden experimentar eventos que perciben como traumáticos cuando proporcionan atención clínica. Como resultado, algunas desarrollarán trastorno de estrés postraumático (TEPT) con efectos adversos para la salud mental de las matronas, la calidad de la atención brindada a las mujeres y las organizaciones en donde trabajan. El POPPY (Programa para la prevención del TEPT en obstetricia) es un conjunto de recursos educativos y de apoyo que comprende un taller educativo, folletos informativos, soporte de pares y acceso a intervenciones psicológicas centradas en el trauma. Se realizó un estudio de factibilidad de la implementación de POPPY.

Objetivo: Identificar el impacto de POPPY en la comprensión del trauma por parte de las matronas, su bienestar psicológico y la satisfacción en el trabajo.

Método: Se implementó POPPY en un sitio del hospital entre octubre de 2016 y septiembre de 2017. Las matronas (n = 153) empleadas en el sitio anfitrión completaron cuestionarios de auto-reporte antes de participar en el taller POPPY (T1), que midió la exposición al trauma relacionado al trabajo, conocimiento y confianza en el manejo de respuesta al trauma, impacto profesional, síntomas de TEPT, agotamiento y satisfacción en el trabajo. Las mediciones se repitieron (T2) aproximadamente 6 meses después del entrenamiento (n = 91, 62%).

Resultados: la confianza de las matronas en el reconocimiento (p = .001) y el manejo de las respuestas tempranas al trauma en sí mismas (p < .001) y colegas mejoró significativamente (p < .001). Hubo una tendencia en la reducción de los niveles de sintomatología de TEPT, y

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PALABRAS CLAVES

Factibilidad; matronas; prevención; psicoeducación; Trastorno de Estrés Postraumático; trauma.

关键词

可行性; 助产士; 预防; 心理教育; 创伤后应激障碍; 创伤

HIGHLIGHTS

- There is potential for midwives to experience trauma while providing care, and for a proportion to develop post-traumatic stress disorder (PTSD) as a result.
- POPPY is the first programme aimed specifically at preparing midwives for trauma exposure, preventing PTSD and providing access to appropriate input.
- Findings from this feasibility study highlight potential important positive impacts on midwives' personal well-being and engagement with recipients of care, and for reduced disruption within maternity services.

menos matronas informaron niveles subclínicos de TEPT (10% a 7%). La proporción de matronas que informaron niveles altos y moderados de despersonalización hacia la atención se redujo (33% a 20%) y las matronas informaron niveles significativamente más altos de satisfacción laboral en T2 ($p < .001$). Se identificaron: reducciones en el ausentismo auto-reportado relacionado con el estrés (12% a 5%), cambios a largo plazo en la asignación clínica (10% a 5%) y razones para dejar la profesión de matrona (34% a 27%).

Conclusiones: los hallazgos resaltan un potencial muy positivo del programa POPPY para mejorar la salud mental de las matronas, la sensibilidad de la atención que brindan y reducir la interrupción del servicio y los costos para los proveedores de servicios. Se requiere una evaluación a gran escala.

预防助产士患上创伤后应激障碍的项目 (POPPY) : 来自一项可行性研究的有效性证据

背景: 助产士在提供护理时会经历他们认为具有创伤性的事件。由此, 一些人会发展成创伤后应激障碍 (PTSD)。这不利于助产士的心理健康, 及其为产妇和雇用组织提供的护理质量。POPPY计划 (Programme for the prevention of PTSD in midwifery, 助产士PTSD预防计划) 是一个提供教育和支持性资源的一揽子计划, 包括教育工作坊、资料传单、同辈支持以及获取聚焦创伤临床心理学干预的渠道。关于实施POPPY计划的可行性研究已经完成。

目标: 考察POPPY计划对助产士关于创伤的理解、他们的心理健康和工作满意度的潜在影响。

方法: 2016年10月至2017年9月在一个医院开展了POPPY计划。在主办医院工作的助产士 ($N = 153$) 在参加POPPY工作坊之前 (T1) 完成了自我报告问卷, 测量了工作相关的创伤、应对创伤反应的知识和信心、职业影响、PTSD症状、职业倦怠和工作满意度。训练之后约6个月进行重复测量 (T2) ($N=91$, 62%)。

结果: 助产士对识别 ($p = .001$) 和应对自己 ($p < .001$) 和同事 ($p < .001$) 的早期创伤反应的信心显著改善。PTSD症状水平呈降低趋势, 并且助产士报告的亚临床PTSD减少 (10%至7%)。助产士报告高度和中度的护理中人格解体的比例降低 (33%至20%), 助产士在T2报告的工作满意度显著提高 ($p < .001$)。自我报告的压力相关的缺勤率 (12%至5%)、临床分配的长期变化 (10%至5%) 和离开助产专业的想法 (34%至27%) 有所减少。

结论: 结果强调了POPPY计划在改善助产士心理健康和医疗服务的敏感性以及减少服务干扰和信任成本方面的积极潜力。未来还需要进行大规模的纵向评估。

1. Introduction

Midwives can experience work-related events that they find traumatic. Exposure to trauma through the provision of care can lead to adverse psychological responses, including post-traumatic stress disorder (PTSD) (APA, 2013). The vulnerability of midwives to such responses has been highlighted (Sheen, Slade, & Spiby, 2014), where factors pertinent to the midwifery profession (empathic engagement, organizational stress) were associated with an increased risk for post-traumatic stress responses in other health professional groups. A large-scale UK investigation of midwives' experiences of work-related trauma and PTSD reported findings indicating that at least one in 20 midwives were experiencing levels of symptoms commensurate with a PTSD diagnosis (Sheen, Spiby, & Slade, 2015).

PTSD is characterized by repeated and involuntary recollection of the traumatic event, avoidance of reminders or feeling 'numb', a state of constant vigilance to surroundings ('hyperarousal'), negative beliefs about the self, the world and other people, or lower mood levels. PTSD is acutely distressing and can be enduring if not appropriately managed; however, it is not an inevitable outcome following exposure to trauma.

Following a traumatic experience, midwives report reduced levels of confidence and an increased tendency

to practise defensively (Elmir, Pangas, Dahlen, & Schmied, 2017; Sheen, Spiby, & Slade, 2016). Levels of PTSD have also been associated with burnout, including higher levels of emotional exhaustion and an increased tendency to depersonalize recipients of care (Sheen et al., 2015). A midwife who is emotionally exhausted or experiencing PTSD is unlikely to be able to provide the compassionate and sensitive care that is so important for childbearing women (Department of Health, 2012).

There are negative implications for maternity services. After a traumatic experience, midwives may take time off sick, change their clinical allocation or consider leaving midwifery altogether (Leinweber, Creedy, Rowe, & Gamble, 2017a; Sheen et al., 2015; Wahlberg et al., 2016). In an Australian survey, midwives with probable PTSD were four times more likely than those without to report an intention to leave their profession (Leinweber, Creedy, Rowe, & Gamble, 2017b). Swedish midwives with partial or probable PTSD symptoms were significantly more likely to report that they had amended their clinical allocation to outpatient care, and to have taken sick leave following a trauma experience when compared to midwives without partial or probable PTSD (Wahlberg et al., 2016). The potential for increased disruption within services is a pertinent issue for UK maternity organizations, where existing and

increasing pressures on staff have been attributed to workforce shortages, increasing birth rates and case complexity (RCM, 2017b).

There are currently no specific methods in place to support midwives in the context of trauma exposure. An in-depth interview study with UK midwives ($n = 35$) highlighted a lack of preparation for encountering trauma or developing PTSD responses (Sheen, Slade, & Spiby, 2016b). Midwives also reported an unhelpful organizational climate, and typically did not perceive responses from senior colleagues or managers to be emotionally supportive. In addition, midwives who sought external input to help manage their responses to trauma were often referred to counselling services, despite counselling being contraindicated for the treatment of PTSD (NICE, 2005).

The Programme for the prevention of PTSD in midwifery (POPPY) was developed from primary research with midwives (Sheen et al., 2015, 2016, 2016b), integrated with psychological theory. After a traumatic event, stress responses develop indicative of normal memory processing. The way that an individual responds to the responses (e.g. flashbacks, intrusive thoughts) can influence the likelihood that the stress responses naturally decline (Ehlers & Clark, 2000). For example, if an individual attempts to avoid talking about or 'blocks out' thoughts of the event, then the natural processing can be inhibited. POPPY involves guidance in the self-management of early responses to trauma to aid processing of a traumatic event, maximizing opportunities for natural resolution. Furthermore, implementing helpful strategies for processing initially after a traumatic event may prevent the use of maladaptive coping strategies linked to both the development and maintenance of PTSD (Ehlers & Clark, 2000; Wessley et al., 2008).

POPPY involves a stepped care process and combines educational and supportive resources: (1) to prepare midwives for the potential to experience work-related trauma, understand normal responses and provide simple self-management to prevent the development of PTSD; (2) to provide peer support to facilitate resolution of difficult experiences; and (3) to provide trauma-focused clinical psychology intervention where required.

The POPPY resources include:

- (1) *The POPPY workshop*. This is a 2.5 hour interactive training session aimed at supporting midwives' understanding about trauma experiences and responses, and providing guidance on methods of managing feelings in the early weeks after a traumatic event. Midwives are also provided with a leaflet summarizing the workshop content.
- (2) *POPPY peer support*. This provides midwives with the opportunity to receive confidential support over the telephone from a midwife

peer, trained specifically for this purpose.

- (3) *Referral and access to psychological assessment and input*. Midwives experiencing difficulty over 3 months after a traumatic work-related event are able to contact a clinical psychologist (SC) to receive assessment and, where required, trauma-focused structured psychological intervention (cognitive behavioural therapy).

Between October 2016 and September 2017, POPPY programme was provided for midwives at one hospital site in the north-west of England to evaluate the feasibility of implementation and acceptability of resources. Preliminary indications of effectiveness were evaluated as part of this feasibility evaluation, which forms the focus of this manuscript. This involved identifying and examining any indications of impacts (understanding of trauma and managing responses, psychological well-being) following the implementation of the POPPY programme. Qualitative evaluations of POPPY's feasibility are presented separately.

2. Methods

2.1. Design

Midwives completed self-report questionnaires just before participating in the POPPY workshop, and again approximately 6 months later.

2.2. Procedure

The POPPY workshops were provided from October 2016 until June 2017. The additional POPPY resources (peer support, access to trauma-focused psychological assessment and input) were available between October 2016 and September 2017 only for midwives who consented to participate in the research. At the beginning of each POPPY workshop, midwives were invited to participate in the study aimed at evaluating the feasibility and acceptability of the programme, and to provide preliminary information about its utility. Participation in the POPPY research involved the completion of a self-report questionnaire immediately before receiving the POPPY training, repeated 6 months later. Midwives who chose not to participate in the POPPY research still received the POPPY workshop as part of mandatory training.

2.3. Measures

This questionnaire collected basic descriptive data, including understanding of trauma and responses, levels of PTSD, burnout and job satisfaction. Recruitment and retention data were recorded. Completed questionnaires were returned directly to

the researcher at the time of the workshop. Follow-up questionnaires could be completed as hard copy and returned by post, or online.

Demographic variables and professional variables (years' experience in the profession, years' practising clinically as a midwife, current professional designation, NHS Agenda for Change band, and whether working full time or part time) were recorded. *Personal as opposed to work trauma history* was assessed using Criterion A of the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition, Text Revision (DSM-IV-TR); an event where they believed themselves or someone else to be in danger of serious injury or death, and where they experienced a sense of intense fear, helplessness or horror in response (APA, 2010).

Midwives' understanding about traumatic perinatal events and the management of psychological responses in themselves or their colleagues were assessed using three items. These included the degree of confidence felt with their (1) knowledge of what a traumatic perinatal event was, (2) knowledge of how to self-manage early responses to trauma should they experience a traumatic event, and (3) knowledge of how to help a colleague who experienced a traumatic event. Responses were scored from 0 (not confident at all) to 4 (very confident).

Midwives were asked whether they had ever experienced a traumatic perinatal event (1) throughout their career as a midwife, and (2) in the past 5 years. The definition of a traumatic perinatal event was provided in the questionnaire, and corresponded to Criterion A of the DSM-IV for PTSD (APA 2010). Midwives were also asked to indicate as a result of trauma exposure whether in the past 6 months they had (1) taken time off due to stress, (2) made a short-term or long-term change to their clinical allocation, (3) seriously considered leaving midwifery, or (4) seriously considered leaving their current organization.

The following standardized scales were also included.

The Impact of Event Scale – Revised (IES-R) (Weiss & Marmar, 1997) was used to measure symptoms of PTSD. This assesses symptoms of intrusion, avoidance and hyperarousal. The IES-R has demonstrated excellent internal validity (Weiss & Marmar, 1997). A total score of 33 or above (from a potential range of 0–88) was used to indicate symptoms of PTSD occurring at levels commensurate with a clinical diagnosis. This threshold has been reported to predict clinical diagnosis of PTSD with sensitivity of 73%, specificity of 72%, positive predictive value of 0.78 and negative predictive value of 0.67 (Rash, Coffey, Baschnagel, Drobos, & Saladin, 2008). The presence of subclinical symptoms of PTSD was inferred using a cut-off of 22 or above, previously demonstrated to predict the

presence of PTSD with sensitivity of 92%, specificity of 57%, positive predictive accuracy of 0.74 and negative predictive accuracy of 0.83 (Rash et al., 2008).

The *Maslach Burnout Inventory Human Services Survey* (MBI) (Maslach, Jackson, & Leiter, 1996) was used to measure symptoms of burnout. This assesses three separate domains of burnout: emotional exhaustion, depersonalization and personal accomplishment. Higher scores on the emotional exhaustion (potential range 0–54) and depersonalization (potential range 0–30) subscales and lower scores on the personal accomplishment (potential range 0–48) subscale indicate elevated burnout. For the purposes of this study, several items in the scale referring to 'recipients of care' were amended to refer to 'women in my care'. The MBI has demonstrated good internal consistency for each domain (Maslach et al., 1996).

The *Attitudes to Professional Role* scale was used to assess job satisfaction (Turnbull, Reid, McGinley, & Shields, 1995). It assesses professional satisfaction, professional support, client interaction and professional development. Items are scored from 1 (strongly agree) to 5 (strongly disagree). Scores are interpreted via the stratification of the scale to a range of –2 to 2 followed by calculation of mean scores for each subscale. Lower scores denote more negative attitudes.

2.4. Analysis

Descriptive statistics were computed for total scores on the IES-R, MBI and Attitudes to Professional Role subscales. Total scores were computed based on means of valid items if missing items constituted <20% within each subscale or scale; specifically, this mean was multiplied by the total number of items to obtain total scores. Where missing items exceeded this proportion of the scale then the response for the total scale was considered missing. Owing to missing values, total *N* values vary for descriptive statistics. To compare changes over time, Mann–Whitney *U* tests were used to examine mean scores where groups were independent. Wilcoxon signed rank tests were used to examine changes in midwives' understanding and confidence in managing trauma responses, mean levels of PTSD symptomatology, and attitudes to their professional role at T1 and T2. McNemar tests were used to examine changes over time where paired variables were dichotomous (professional impacts, clinical and subclinical levels of PTSD at T1 and T2). Where nominal variables formed three categories (examination of changes in burnout categorization, examination of clinical, subclinical and below-threshold levels of PTSD), McNemar–Bowker tests were conducted. As this was a feasibility study, significance was inferred at $\alpha = .10$, or $p < .100$, to identify preliminary

indications of significance. Statistical analyses were conducted using IBM SPSS version 22.

3. Results

3.1. Participant characteristics

In total, 176 midwives received the POPPY training in 29 group workshops and 153 midwives participated in the POPPY research. Details are shown in Table 1.

3.2. Baseline measures

3.2.1. Work-related perinatal trauma

The majority of participants ($n = 136$, 89%) reported that they had experienced a work-related traumatic event at some point during their career as a midwife. Over two-thirds ($n = 104$, 68%) reported that they had experienced a traumatic perinatal event while working as a midwife in the past 5 years.

3.2.2. Confidence in knowledge of trauma and trauma responses

Before the workshop, only just over one-third of midwives ($n = 54$, 36%) were very confident in their knowledge of what could constitute a traumatic

perinatal event and 57% ($n = 86$) were somewhat confident. Few midwives ($n = 20$, 13%) were very confident in their ability to self-manage early responses to trauma and 54% ($n = 81$) were somewhat confident. Few ($n = 18$, 12%) were very confident in their ability to help a colleague who had experienced trauma and 53% ($n = 79$) were somewhat confident (Table 2).

3.2.3. Impacts on professional role

The proportions of midwives reporting different impacts on their professional role are presented in Table 3. Over one-third of participants had seriously considered leaving their current organization ($n = 54/150$, 36%), and a similar proportion had seriously considered leaving midwifery ($n = 53/150$, 35%). Almost one-quarter of midwives reported that, in the past 6 months, they had taken time off work owing to stress as a result of trauma exposure ($n = 36/150$, 24%), 7% reported that they had changed or had seriously considered changing their clinical allocation on a short-term basis (e.g. one or two shifts), and 10% had changed or seriously considered changing their clinical allocation on a long-term basis (Table 3).

Table 1. Demographics, professional experience and designation details for all participants.

	Baseline ($N = 153$)		Follow-up ($n = 91$)	
	M (SD)	Range	M (SD)	Range
Age (years)	46.01 (0.94)	23–69	47.29 (10.62)	23–70
Qualified (years)	17.66 ^a (10.89)	0.3–46	19.21 (11.36)	0.5–42
Working clinically (years)	16.93 ^a (10.78)	0.3–46	18.38 (10.98)	0.5–42

		Baseline ($N = 153$)		Follow-up ($n = 91$)	
		n	%	n	%
Gender	Female	153	100.0	91	100.0
	Male	0	0	0	0
Education	Degree level	55	36.2	33	36.3
	Diploma/certificate	44	28.9	15	16.5
	RM/SCM	34	22.4	28	30.8
	MSc	7	4.6	7	7.7
	Advanced/specific qualification	12	7.9	8	8.2
	Missing	1		0	
Main current professional designation	Delivery suite	38	24.8	25	27.5
	MLU	26	17.0	12	13.2
	Maternity ward	16	10.5	9	9.9
	Antenatal clinic	5	3.3	4	4.4
	Community midwifery	40	26.1	25	27.5
	MAU	6	3.9	2	2.2
	Multiple designations/roles	6	3.9	3	3.3
	Other	16	10.5	11	12.1
NHS band	5–6	122	81.3	72	79.1
	7–8	28	18.7	19	20.9
	Missing	3		0	
Previous GP visit	Yes	70	45.8	38	41.8
	No	80	52.3	51	56.0
	Missing	3	2.0	2	2.2
Outcome of GP consultation ($n = 70$) ^b	Counsellor	40	57.1	27	71.1
	No referral	20	28.6	9	23.7
	Multiple	6	8.6	0	0
	Psychologist	2	2.9	1	6.8
	Other	2	2.8	1	2.6
Personal prior trauma	Yes	82	93.2	45	90.0
	No	6	6.8	5	10.0
	Missing	65		41	

^a $N = 152$; ^bpercentage expressed as the proportion of respondents indicating 'yes' to the stem question (previous GP visit).

NHS, National Health Service; GP, general practitioner; RM, registered midwife; SCM, state certified midwife; MLU, midwife led unit; MAU, medical admission unit.

Table 2. Midwives' confidence in understanding and managing responses to trauma experiences.

		Total sample at baseline (<i>N</i> = 153)	Follow-up sample at baseline (<i>n</i> = 87)	Follow-up sample at T2 (<i>n</i> = 89)
		<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)
Knowledge of a traumatic event	Very confident	54 (36.0)	32 (36.3)	47 (52.8)
	Somewhat confident	86 (57.3)	50 (56.8)	40 (44.9)
	Not very confident	10 (6.7)	5 (5.7)	2 (2.2)
	Not confident at all	0 (0)	0 (0)	0 (0)
	Missing	3		
Self-management after experiencing trauma	Very confident	20 (13.4)	9 (10.2)	32 (36.0)
	Somewhat confident	81 (54.4)	50 (56.8)	51 (57.3)
	Not very confident	43 (28.9)	24 (27.3)	3 (3.4)
	Not confident at all	5 (3.4)	4 (4.5)	3 (3.4)
	Missing	4		
How best to help a colleague who experienced trauma	Very confident	18 (12.0)	9 (10.3)	29 (32.6)
	Somewhat confident	79 (52.6)	46 (52.9)	54 (60.7)
	Not very confident	46 (30.7)	28 (32.2)	5 (5.6)
	Not confident at all	7 (4.7)	4 (4.6)	1 (1.1)
	Missing	3		

Percentages represent the proportion of available data.

Table 3. Proportion of midwives reporting professional impacts.

		Total sample at baseline (<i>N</i> = 150 ^a)		Follow-up sample at baseline (<i>n</i> = 89)		Follow-up sample T2 (<i>n</i> = 89)	
'In the past six months have you:'		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Taken time off sick due to stress	Yes	16	10.7	11	12.4	4	4.5
	No	114	76.0	66	74.2	76	85.4
	Strongly considered	20	13.3	12	13.5	9	10.1
Changed your clinical allocation on a short-term basis	Yes	9	6.0	5	5.6	7	7.9
	No	140	93.3	83	93.3	79	88.8
	Strongly considered	1	0.7	1	1.1	3	3.4
Changed your clinical allocation on a long-term basis	Yes	14	9.3	9	10.1	4	4.5
	No	135	90.0	80	89.9	84	94.4
	Strongly considered	1	0.7	0	0	1	1.1
Seriously considered leaving midwifery	Yes	53	35.4	30	33.7	24	27.0
	No	97	64.7	59	66.3	65	73.0
Seriously considered leaving current organization	Yes	54	36.2	34	38.2	32	35.9
	No	95	63.8	55	61.8	57	64.1

^a Three missing.

3.2.4. Post-traumatic stress symptoms

Table 4 shows mean total scores on the IES-R for all midwives who reported experiencing a traumatic perinatal event at least once while working as a

midwife (*n* = 136). Fourteen per cent reported symptoms of PTSD commensurate with a clinical diagnosis (*n* = 19) and an additional 10% reported subclinical levels.

Table 4. Descriptive statistics for scores on the Impact of Event Scale – Revised (IES-R).

	Total sample at baseline (<i>N</i> = 136)	Follow-up sample at baseline (<i>n</i> = 88)	Follow-up sample T2 (<i>n</i> = 88)
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)
Intrusion	5.64 (6.49)	5.10 (6.06)	4.09 (5.87)
Avoidance	4.80 (6.40)	4.68 (6.30)	3.60 (5.55)
Hyperarousal	2.39 (3.39)	2.16 (3.64)	2.60 (4.52)
Total IES-R	12.83 (15.33)	11.94 (14.47)	10.30 (15.52)
Clinical cut-off	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)
≥ 33	19 (14.0)	10 (11.0)	11 (12.5)
< 33	117 (86.0)	81 (89.0)	77 (87.5)
Subclinical cut-off	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)
≥ 22	30 (22.1)	19 (21.6)	17 (19.3)
< 22	106 (77.9)	69 (78.4)	71 (80.7)

3.2.5. Burnout

Mean total scores for each burnout subscale were indicative of a moderate level of emotional exhaustion, low level of depersonalization and moderate level of personal accomplishment. Just under 40% ($n = 59$, 39%) reported high emotional exhaustion, 7% ($n = 10$) reported high levels of depersonalization and 28% ($n = 41$) reported low levels of personal accomplishment within their professional role (Table 5).

3.2.6. Job satisfaction

Midwives held more positive attitudes towards their general satisfaction with their role and interaction with clients. Attitudes were slightly lower for the potential for professional development. Scores on the professional support subscale were lowest, indicative of more negative attitudes (Table 6).

3.3. Findings at follow-up

3.3.1. Comparisons of responders and non-responders at follow-up

In total, 91 (62%) of 147 midwives had returned their follow-up questionnaire by the cut off for analysis due to funding. The average time at follow-up was 5 months ($SD = 1.51$, range 2–10 months). Midwives who did and those who did not return the follow-up survey did not differ significantly in terms of age [$U(147) = 2189.50$, $p = .152$], length of experience in midwifery [U

(146) = 2177.50, $p = .168$], length of experience working in clinical practice [$U(146) = 2161.00$, $p = .148$] or presence of work-related trauma experience [$X^2(1,144) = .334$, $p = .398$]. A significantly larger proportion of non-respondents had experienced a traumatic perinatal event in the previous 5 years in comparison to responders [$X^2(1,143) = 6.65$, $p = .015$]. No significant differences were reported by non-responders compared to responders in the baseline level of PTSD symptoms or burnout [$U(147) = 2364.00$, $p = .460$], emotional exhaustion [$U(146) = 2432.00$, $p = .623$], depersonalization [$U(146) = 2258.00$, $p = .146$] or personal accomplishment [$U(146) = 2467.00$, $p = .729$].

Almost 40% ($n = 34/89$, 38%) reported that they had experienced a traumatic perinatal event in the previous 6 months, defined as an event where they perceived a woman or her infant to be at risk of serious injury or death and where they felt fear, helplessness or horror in response.

3.4. Comparison of time 1 (T1) and time 2 (T2)

3.4.1. Understanding of trauma and self-management

At T2, the majority of midwives ($n = 87$, 98%) felt very or somewhat confident in their knowledge of traumatic perinatal events, and 93% ($n = 82$) felt very or somewhat confident in their ability to self-manage early responses to trauma. In addition, 93% ($n = 83$) felt very or somewhat confident in their ability to help a colleague should

Table 5. Descriptive statistics for scores on the Maslach Burnout Inventory (MBI).

		Total sample at baseline ($N = 153$)	Follow-up sample at baseline ($n = 87$)	Follow-up sample at T2 ($n = 87$)	Comparison baseline and T2 for follow-up sample ($n = 87$)
Emotional exhaustion	$M (SD)$	23.20 (11.70)	23.35 (11.40)	22.34 (10.63)	
Depersonalization	$M (SD)$	4.60 (4.38)	4.73 (4.08)	4.63 (4.57)	
Personal accomplishment	$M (SD)$	35.65 (8.04)	35.51 (7.69)	36.13 (8.34)	
Category					
Emotional exhaustion	High, n (%)	59 (38.6)	32 (36.8)	30 (34.5)	$p = .837$
	Moderate, n (%)	41 (26.8)	27 (31.0)	28 (32.2)	
	Low, n (%)	53 (34.6)	28 (32.1)	29 (33.3)	
Depersonalization	High, n (%)	10 (6.5)	5 (5.7)	10 (11.6)	$p < .001^*$
	Moderate, n (%)	36 (23.5)	24 (27.6)	7 (8.1)	
	Low, n (%)	107 (69.9)	58 (66.7)	69 (80.2)	
Personal accomplishment	High, n (%)	67 (43.8)	39 (44.8)	42 (48.3)	$p = .043^*$
	Moderate, n (%)	44 (28.8)	24 (27.6)	25 (28.7)	
	Low, n (%)	41 (27.5)	24 (27.6)	20 (23.0)	

* $p < 0.10$

Table 6. Descriptive statistics for scores on the Attitudes to Professional Role scale.

	Total sample at baseline ($N = 151$)		Follow-up sample at baseline ($n = 85$)		Follow-up sample at T2 ($n = 85$)	
	Range	$M (SD)$	Range	$M (SD)$	Range	$M (SD)$
Professional satisfaction	–1 to 1.83	0.52 (0.61)	–1.00 to 1.83	0.47 (0.57)	–0.67 to 1.83	0.75 (0.58)
Professional support	–1.8 to 1.40	–0.17 (0.68)	–1.80 to 1.20	–0.22 (0.66)	–1.40 to 1.93	0.21 (0.61)
Client interaction	–0.8 to 1.40	0.28 (0.44)	–0.80 to 1.40	0.28 (0.45)	–0.60 to 2.00	0.68 (0.70)
Professional development	–1.50 to 2	0.17 (0.75)	–1.25 to 2.00	0.13 (0.74)	–0.75 to 1.75	0.55 (0.62)

they experience a work-related traumatic perinatal event (Table 2). Findings indicated that midwives' confidence in their knowledge of trauma ($Z = -3.30$, $p = .001$), their confidence in managing early trauma responses ($Z = -4.99$, $p < .001$) and their confidence in knowing how to help a colleague following an adverse event ($Z = -5.46$, $p < .001$) were all significantly higher at follow-up.

3.4.2. Post-traumatic stress symptomatology

Over time, the total scores on the IES-R were slightly reduced (T1 $M = 11.81$, $SD = 14.39$; T2 $M = 10.30$, $SD = 15.52$); however, this just misses significance ($Z = -1.62$, $p = .105$) (Table 4). Eleven midwives (13%) reported clinical levels of PTSD symptoms at T2 and an additional 7% ($n = 6$) reported subclinical levels of PTSD symptoms. The proportion of midwives reporting subclinical levels of PTSD reduced from 10% at T1 to 7% at T2 (Table 4).

3.4.3. Burnout

Similarly to T1, mean total scores were indicative of a moderate level of emotional exhaustion, low level of depersonalization and moderate level of personal accomplishment. The findings indicated that the proportions of individuals reporting low, moderate and high levels of emotional exhaustion were not significantly different between T1 and T2 [McNemar–Bowker (3) = 0.85, $p = .837$]. There was, however, a significant difference in depersonalization categories [McNemar–Bowker (3) = 60.63, $p < .001$]. The proportion of individuals reporting low levels of depersonalization increased from 67% to 80%, indicative of a reduced tendency for staff to distance themselves from recipients of care. Personal accomplishment significantly improved [McNemar–Bowker (3) = 8.16, $p = .043$], with the proportion of individuals reporting levels of high personal accomplishment increasing from 45% to 48%, and the proportion of individuals reporting low personal accomplishment reducing from 28% to 23% (Table 5).

3.4.4. Professional impacts

There was a general reduction in stress-related professional impacts between baseline and follow-up (Table 3). The proportion of trauma-related self-reported stress-related sickness absence halved from 12% (T1 $n = 11$) to 5% (T2 $n = 4$); however, this proportion just misses statistical significance (McNemar $p = .106$). Short-term changes to clinical allocation over time were unchanged (T1 $n = 5$, 6%; T2 $n = 6$, 7%; McNemar $p = .727$). The proportion of those making a long-term change to their clinical allocation reduced from 10% ($n = 9$) at T1 to 5% ($n = 4$) at T2, but this difference was not significant (McNemar $p = .125$). In addition, the proportion of

midwives who had seriously considered leaving midwifery significantly reduced from 34% ($n = 30$) at T1 to 27% ($n = 24$) at T2 (McNemar $p = .065$). There was a slight reduction in those reporting seriously considering leaving the current organization, from 37% ($n = 32$) at T1 to 35% ($n = 30$) at T2, but this was not significant (McNemar $p = .804$).

3.4.5. Job satisfaction

Midwives' attitudes to their professional role were all significantly higher at T2 than at T1, for each domain of professional satisfaction ($Z = -3.58$, $p < .001$), professional support ($Z = -5.33$, $p < .001$), client interaction ($Z = -4.09$, $p < .001$) and professional development ($Z = -4.95$, $p < .001$) (Table 6).

4. Discussion

POPPY is the first package of resources developed specifically to prevent the development of PTSD in midwifery, and to facilitate the provision of appropriate intervention where required. The POPPY study was not originally intended to be powered to detect statistical differences or changes over time, and these preliminary inferences are drawn with the recognition of relatively small subgroup analyses.

On entry to the study, almost all midwives (89%) reported that they had experienced a traumatic work-related event at least once during their career, and 14% of participants were reporting clinically relevant levels of PTSD symptomatology. It seems likely that exposure to traumatic events is an inherent aspect of the role and PTSD a potential work-related hazard. The integration of POPPY training into mandatory study days removed the potential for self-selection, and therefore the findings confirm that the experience of trauma and PTSD is an issue for clinical services. These findings also confirm recent studies highlighting that a significant proportion of midwives experience trauma and consequential PTSD as part of their working lives (Leinweber et al., 2017; Schröder et al., 2016; Wahlberg et al., 2016).

Midwives' confidence in recognizing and managing early responses to trauma in both themselves and their colleagues were enhanced at follow-up. This increase in understanding and confidence indicates that the POPPY training workshop may be an effective method of improving midwives' understanding and ability to self-manage responses to trauma, as intended.

There was a trend towards lower overall PTSD scores, and fewer midwives reported subclinical levels of PTSD symptoms at T2. The provision of training about PTSD and methods of managing early responses, and the ability to access additional sources

of appropriate support if needed, may have beneficially impacted midwives' well-being.

There was a reduction in the proportion of midwives reporting moderate or high depersonalization or distancing towards women in their care. The capacity for a midwife to empathically engage with women is essential for the provision of compassionate care, and to facilitate effective communication throughout the perinatal period. A recent survey in the Netherlands highlighted the importance of communication and clear, supportive interactions from healthcare providers in reducing the likelihood that birth was perceived as traumatic by new mothers (Hollander et al., 2017). Recent National Health Service (NHS) guidance in England plans for a system providing women and their families with greater continuity of care to facilitate the provision of empathic, woman-centred and quality care (NHS England, 2016). Reducing the depersonalization of recipients of care will have positive implications for midwives' capacity to provide effective, high-quality and empathic care for women.

The findings highlight the potential for reduced disruption within services, with fewer midwives reporting having taken stress-related absenteeism, making a long-term change to their clinical allocation or seriously considering leaving the midwifery profession. One interpretation of these findings could be that the workshop and provision of POPPY had positively impacted upon midwives' coping strategies. Reports indicate that there is currently a deficit of 3500 midwives within UK maternity services (Royal College of Midwives, 2017b). Staff shortages, increasing workload and an inability to have enough time to provide quality care for women lead to more midwives leaving the profession, further exacerbating the strain on services (Royal College of Midwives, 2017a, 2017b). Trauma exposure is one aspect contributing to organizational disruption, and findings from this feasibility study suggest that POPPY may have important benefits for organizations and contribute towards service improvement.

Positive impacts at the individual level were identified, with midwives reporting more positive perceptions of their professional role and level of support at work, satisfaction with client interaction and opportunities for professional development. It has previously been identified that an absence of support is a key determinant of a midwife's decision to leave the profession (Curtis, Ball, & Kirkham, 2006; Royal College of Midwives, 2017b). These findings highlight preliminary impacts that could support retention in midwifery services.

4.1. Implications

There is growing acknowledgement internationally of the need to identify methods of reducing midwives'

distress following trauma exposure (Cohen, Leykin, Golan-Hadari, & Lahad, 2017; Leinweber et al., 2017a; Wahlberg et al., 2016).

POPPY was developed for midwives but the findings may have relevance for other maternity professional groups where similar levels of trauma exposure may occur (Schröder et al., 2016). A study of obstetricians and midwives in Sweden ($n = 706$) reported that 43% of obstetricians had experienced a work-related event fulfilling Criteria A1 and A2 of the DSM-IV-TR, and that 7% were reporting symptoms fulfilling PTSD criteria (Wahlberg et al., 2016). Obstetricians reporting partial or probable levels of PTSD were more likely to have changed their location of practice away from the delivery suite, having stopped being on call or changing their allocation to outpatient care (Wahlberg et al., 2016). Given the evidence of parallel impacts, there is a requirement to examine the experiences of obstetricians and gynaecologists further and determine whether, and how, elements of POPPY could be extrapolated for the benefit of this professional group. The INDIGO study (Investigation into the experience of traumatic work-related events in gynaecologists and obstetricians), currently underway, aims to identify the scale and nature of impact in medical professionals and inform the need for and development of appropriate preventive and supportive interventions.

4.2. Limitations

These findings provide preliminary indications of effectiveness, as this feasibility study was not powered to detect statistical differences. The response rate of 62% must be noted and the potential for response bias or over-optimistic results acknowledged; however, intention-to-treat analysis was not undertaken to avoid overly conservative estimates at the level of feasibility. A key symptom of PTSD is avoidance, which may have led some POPPY participants experiencing high levels of PTSD to avoid completing a subsequent questionnaire about their symptoms. Impacts were recorded following a relatively short period of time, and with a small sample of midwives on a single site. Further evaluation of the programme is now warranted to establish its feasibility for scalability and ultimately to establish its effectiveness via longitudinal evaluation (e.g. a randomized controlled trial including intention-to-treat analyses) on a multi-site basis.

5. Conclusion

This preliminary quantitative evaluation of POPPY indicates its potential utility for improving midwives' understanding and confidence in managing early responses to trauma. Evidence of potential improvements to midwives' mental health was also detected

via a reduction in subdiagnostic levels of PTSD and improved job satisfaction. Lower levels of depersonalization were also identified, with positive implications for the quality of care. There was also reduced service disruption via lower absenteeism, fewer long-term changes to clinical allocation and a lower proportion of midwives considering leaving the profession. This is the first programme specifically aimed at preventing PTSD in midwifery, and the findings emphasize the value of and need for further longitudinal multisite evaluation.

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