

PEER-REVIEWED ARTICLE

Confidence in coping with patient aggression before and after MAP training

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Background: Violence and threats against healthcare personnel are a growing problem globally. Research indicates that healthcare personnel in psychiatric services face a high risk of work-related violence. The 'Managing Aggression in Patients' (MAP) training course is designed to equip staff with skills to manage patient aggression and has been rolled out in all four regional health authorities in Norway. However, there is limited research on MAP training and its impact on staff.

Objective: To investigate whether MAP training increases staff confidence in coping with patient aggression.

Method: The study is a quasi-experimental pre-post study with no control group. The sample (N = 130 at baseline [T0], n = 59 at first follow-up [T1], and n = 40 at second follow-up [T2])

consisted of staff from mental health care and a hospital department for substance use disorders who undertook MAP training at a Norwegian health trust between May and September 2023. Data were collected using questionnaires between May 2023 and January 2024. Confidence in coping with patient aggression was measured using the validated 'Clinician Confidence in Coping with Patient Aggression' scale. Participants were asked to complete the questionnaire at three time points. Baseline data (T0) were collected prior to MAP training. The two follow-up questionnaires (T1 and T2) were distributed electronically one and four months after the MAP training, respectively. Data were analysed using a linear mixed-effects model (LMM).

Results: One month after the MAP training, participants reported a statistically significant increase in confidence in coping with patient aggression ($p < 0.001$). Four months after the training, the reported levels of confidence in coping were broadly similar to those observed at the second measurement point. The large effect size ($d = 0.8$) suggests that the increase in confidence impacts on staff when managing patient aggression.

Conclusion: The results indicate that participants' confidence in coping with patient aggression increased following MAP training. This increase appeared to be sustained over time.

Introduction

Violence and threats against healthcare personnel are a growing problem globally (1). Healthcare staff in psychiatric and substance use disorder services face a higher risk of violence than those in other healthcare settings (2, 3). In Norway, the risk of facing multiple incidents of workplace violence is 12 times higher among staff in mental health services compared with other healthcare workers (4).

Exposure to violence can result in serious physical and psychological consequences (5). The prevalence of violence and threats against healthcare personnel has led to national and international concern and a recognised need for education and practical training in the prevention and management of violent and threatening behaviour (1, 6).

In recent years, health trusts in Norway have developed and rolled out the two-day 'Managing Aggression in Patients' (MAP) training course, which focuses on understanding and managing aggression (7).

MAP has now been introduced as a competence requirement for staff working in mental health services in Norway. However, there is limited knowledge about the impact of MAP training on staff who encounter aggression and violence. A nationally coordinated research effort is therefore underway to examine the effects of MAP on multiple outcome measures, including patient and staff safety and security, the quality of therapeutic relationships and the use of coercive measures (8).

Our study is an independent project in this effort and focuses on staff's confidence in coping with patient aggression, before and after MAP training.

In this context, confidence in coping relates to healthcare personnel's self-efficacy in managing aggression and their ability to intervene in a way that protects both their own and the patient's safety (9). Confidence is a subjective perception shaped by an individual's belief in their own abilities, which, according to Bandura (10), is critical for how individuals think, motivate themselves and act. Confidence in coping can therefore play an important role in reducing violent incidents.

However, it cannot be assumed that a single training course will produce the desired effects in practice. The considerable variation in the courses offered internationally makes it difficult to summarise findings. There is no evidence that education and practical training in preventing and reducing workplace violence have a bearing on the incidence of violence against healthcare personnel (11). Some studies, however, report increased confidence in coping following various forms of aggression management training (12, 13).

In the Norwegian context, teaching de-escalation techniques has been shown to increase confidence in coping among nursing students (14). Lamont and Brunero (12) found significant improvements in participants' risk assessments, use of de-escalation strategies and management of violent situations following training in managing workplace violence.

Fuente et al. (13) reported an increase in participants' confidence in coping following a four-hour course on the warning signs of violence, communication strategies to de-escalate aggression, and management of aggressive behaviour. There is a need to investigate whether the Norwegian equivalent, the MAP training course, which is now being rolled out nationwide, also increases staff confidence in coping with patient aggression in mental health services.

Content of the MAP training course

The MAP course is the result of a collaboration between the four regional health authorities in Norway. The aim was to develop a standardised, evidence-based and quality-assured staff training course that addresses aggression and violence (7).

The course consists of ten modules and is carried out over two days. It covers information about violence and aggression, training in risk assessment and environmental therapy strategies to prevent violence and aggression, awareness of own physical and psychological reactions, de-escalation techniques, and practical training in physical techniques for managing violence (15). An article in the Norwegian Journal of Clinical Nursing describes the content of the course and specifies the number of hours devoted to practising physical techniques (7).

Theoretical framework

Thackrey (9) defines clinician confidence in coping with patient aggression as a belief in one's own cognitive and physical abilities to safely and effectively intervene when patients exhibit aggressive behaviour, in a way that protects both the clinician and patient while maintaining therapeutic integrity.

The concept of 'confidence in coping' can be understood in terms of Bandura's definition of 'self-efficacy'. Bandura (16) defines self-efficacy as an individual's belief in their ability to organise and execute actions, and considers it fundamental to feeling in control of one's own actions and outcomes. However, self-efficacy is a subjective assessment of one's own skills and is therefore no guarantee that the expected outcome will actually be achieved.

Bandura (16) argues that increased knowledge can enhance self-efficacy, which in turn can lead to changes in behaviour or thought processes. In threatening situations, self-efficacy can thus impact on how a person assesses and manages the situation. If they believe they can handle the situation, they will experience less stress than someone who doubts their ability to cope (17).

Previous experiences also play a major role in shaping expectations of one's ability to manage tasks and challenges. Success in past situations increases the likelihood of believing that we can succeed again (16).

Objective of the study

The objective of the study was to investigate whether staff feel more confident in coping with patient aggression after receiving MAP training. We also sought to determine whether their confidence in coping changed over time.

Method

Design

The study was designed as a quasi-experimental pre-post study with no control group, in which the same participants were assessed at three different time points. This design was chosen to examine staff confidence in coping before and after the training, as well as over time. A pretest was conducted prior to the training (T0), followed by two post-tests (T1 and T2). The first post-test (T1) was administered approximately one month after completion of the training, and the second (T2) approximately four months after the training.

Recruitment

All participants who attended MAP training at the health trust between May and September 2023 were invited to take part in the study. Recruitment took place across a total of nine MAP courses during this period. Participants worked in mental health care and a department for substance use disorders at a health trust in Western Norway. Consecutive sampling was carried out on the first day of each course.

Data collection

The data were collected via questionnaires between May 2023 and January 2024. A questionnaire was distributed in paper form on the first day of each course and collected after

15 minutes, constituting the pretest measurement (T0). The two subsequent questionnaires (T1 and T2) were completed electronically via the SurveyXact platform.

Digital questionnaires were emailed to participants one and four months after completion of the MAP training, respectively. Reminders to complete the questionnaire were sent seven and ten days after the initial invitation.

To preserve participant confidentiality, they were asked for a code that was based on a specific formula. The code consisted of letters and numbers and participants provided this at all three time points. Consequently, no identifying information was collected except for the participants' email addresses.

Instrument and variables

To measure participants' subjective self-efficacy in managing patient aggression, we used the 'Clinician Confidence in Coping with Patient Aggression' scale, developed by Thackrey (9).

The questionnaire consists of ten items, with response options ranging from 1 to 11, from very poor to very good. Lower scores indicate lower confidence in coping, while higher scores indicate greater confidence. The minimum possible total score is 10 and the maximum is 110. The questionnaire is designed to yield a single total score of all items and does not allow for analysis of individual items. A Norwegian version has been developed and used in a previous Norwegian study (14).

The 'Clinician Confidence in Coping with Patient Aggression' scale has been used in several previous studies (18, 19) to measure confidence in managing patients with aggressive behaviour. The instrument has demonstrated high reliability (Cronbach's alpha = 0.92) and validity (9).

In our study, Cronbach's alpha was calculated at 0.96 (T0), indicating high internal consistency and supporting the reliability of the scale. In addition, participants were asked to provide demographic information to enable us to describe the study sample.

Data analysis

Data were analysed using IBM SPSS Statistics version 29.0. Descriptive analyses were performed to describe the study sample. These included frequency and mean analyses, with results reported as mean scores and standard deviations (SD).

A loss to follow-up analysis was conducted using Pearson's chi-squared test to compare participants who withdrew with those who completed the study. No analyses of individual questionnaire items were performed, as this instrument is recommended for total score analysis only (9).

Longitudinal data were analysed using a linear mixed-effects model (LMM), which is appropriate for studies in which the outcome variable is examined as a function of time. We

analysed a random intercept, fixed slope model, meaning that there were individual differences in baseline levels but the same change over time for all participants. The intercept was set at baseline (T0).

It was not possible to estimate individual differences in change over time. Time variables were specified as covariates, with the first representing change from T0 to T1 and the second representing change from T1 to T2. Restricted maximum likelihood (REML) estimation was used, and a diagonal (DIAG) covariance structure was specified for within-subject residuals. The significance level was set at 0.05.

Effect size was calculated using the model-estimated values (estimated mean scores and the square root of the intercept variance) from the LMM results in Cohen's d formula $[(M_3 - M_1) / SD_3]$, and interpreted according to the criteria for effect size proposed by Sullivan and Feinn (20): small ($d = 0.2$), medium ($d = 0.5$) and large ($d \geq 0.8$). Effect sizes indicate the impact or size of the effect, beyond statistical significance (20).

Ethical considerations

Participants were provided with both oral and written information about the purpose of the study and how data would be handled. They were also informed that participation was voluntary. Written informed consent was obtained from all participants. The consent forms and questionnaires were stored in accordance with the guidelines of Western Norway University of Applied Sciences (HVL) (21). There were no disadvantages associated with participation in the study.

The study was registered with Sikt – The Norwegian Agency for Shared Services in Education and Research (reference number 721867). Prior approval from the Regional Committees for Medical and Health Research Ethics (REK) was not required.

Results

Sample

A total of 133 course participants were invited to take part in the study. All 133 completed the pretest; however, three responses were excluded because the consent form or questionnaire had not been fully completed. The final study sample therefore consisted of 130 participants ($N = 130$) at baseline (T0).

Most of the 130 participants were qualified healthcare personnel, employed full-time in a psychiatric clinic, aged 18–34 years, and had worked at their current workplace for less than three years (Table 1).

Table 1. Description of the sample with demographic variables

	T0		T1		T2	
	n	%	n	%	n	%
Participants	130	100	59	45.4	40	30.8
Workplace						
Psychiatric clinic	69	53.1	33	55.9	26	65.0
Forensic psychiatry clinic	13	10.0	3	5.0	3	7.5
District psychiatric centre	13	10.0	6	10.1	2	5.0
Dept. for substance use disorders	28	21.5	15	25.4	8	20.0
Child and adolescent psychiatry	7	5.4	2	3.3	1	2.5
Age						
18–34 years	90	69.2	38	64.4	27	67.5
35–50 years	31	23.8	17	28.8	8	20.0
51+ years	9	6.9	4	6.8	5	12.5
Job category*						
Assistant	38	29.2	18	30.5	13	32.5
Healthcare personnel	83	63.8	37	62.7	23	57.5
Other	9	6.9	4	6.8	4	10.0
Percentage of full-time employment						
Full time	78	60.0	37	62.7	26	65.0
Part time	52	40.0	22	37.3	14	35.0
Work experience						
Less than 3 years	94	73.3	39	66.1	30	75.0
3–10 years	22	16.9	15	25.4	5	12.5
More than 10 years	14	10.8	5	8.5	5	12.5

Abbreviations: T0 = pretest before the course, T1 and T2 = posttests

* Assistant: environmental therapy staff with no formal healthcare qualifications

Healthcare personnel: staff with formal healthcare qualifications

Other: patient-facing occupational categories that are not part of the environmental therapy staff

Loss to follow-up analysis

Of the 130 participants in the study, 59 completed the first follow-up (T1) and 40 completed all three questionnaires. This resulted in a response rate of 30.8% at the final measurement point (Table 1). No significant differences were found between participants who dropped out and those who completed the study with respect to age ($p = 0.48$), percentage of full-time employment ($p = 0.57$) or workplace ($p = 0.36$).

Confidence in coping with patient aggression

The total score for confidence in coping was 49.0 (SE 1.62) at T0, 61.1 (SE 1.85) at T1 and 60.87 (SE 2.20) at T2 (Table 2). Descriptively, participants with prior training, older participants and those with more extensive work experience had the highest baseline scores.

The small number of participants in each subgroup meant that the study did not have sufficient statistical power to analyse group differences. Following participation in the MAP training, descriptive analysis indicated an increase in confidence in coping in all subgroups, except for the oldest age group and those in the 'Other' job category.

Table 2. Confidence in coping before and after MAP training, by demographic group

	T0	T1		T2	
	Mean (SD)	Mean (SD)		Mean (SD)	
Workplace					
Psychiatric clinic	47.26 (18.59)	60.03 (18.19)		57.85 (17.95)	
Forensic psychiatry clinic	65.31 (15.59)	80.67 (17.99)		82.33 (11.15)	
District psychiatric centre	49.15 (17.43)	62.00 (14.14)		49.50 (12.02)	
Dept. for substance use disorders	43.96 (13.40)	55.80 (16.05)		54.25 (15.86)	
Child and adolescent psychiatry	55.00 (13.30)	60.00 (21.21)		79.00 (-)	
Age					
18–34 years	47.70 (17.41)	59.50 (15.64)		56.78 (17.10)	
35–50 years	49.43 (16.46)	63.94 (21.52)		70.13 (20.59)	
51+	60.22 (22.66)	51.00 (16.23)		53.80 (14.18)	
Job category*					
Assistant	50.89 (15.96)	63.53 (15.50)		64.38 (15.63)	
Healthcare personnel	47.99 (18.48)	60.68 (18.25)		58.52 (19.11)	
Other	50.22 (18.85)	45.40 (13.37)		45.00 (12.94)	
Percentage of full-time employment					
Full time	47.13 (18.58)	56.62 (17.89)		55.19 (19.15)	
Part time	51.80 (16.12)	66.23 (15.51)		66.29 (13.44)	
Work experience					
Less than 3 years	47.95 (16.46)	59.21 (16.51)		58.47 (16.72)	
3–10 years	49.68 (21.85)	64.20 (20.54)		62.20 (28.42)	
More than 10 years	55.23 (19.14)	56.00 (17.44)		59.60 (17.59)	
Previous training					
Yes	56.21 (19.75)	71.92 (17.16)		77.00 (19.08)	
No	47.40 (16.97)	56.89 (16.35)		55.27 (15.54)	
	Est. mean (SE)	Est. mean (SE)	d***	Est. mean (SE)	d***
Total score**	48.98 (1.62)	61.10 (1.85)	0.84	60.87 (2.20)	0.82

Abbreviations: SD = standard deviation, SE = standard error, T0 = pretest before the course, T1 and T2 = posttests

* Assistant: environmental therapy staff with no formal healthcare qualifications

Healthcare personnel: staff with formal healthcare qualifications

Other: patient-facing occupational categories that are not part of the environmental therapy staff

** Average total score estimated from the linear mixed model (LMM) analyses

***Cohen's d, calculated using the model-estimated values (estimated mean scores and the square root of the intercept variance) from the LMM results in the formula for Cohen's d $[(M_3 - M_1) / SD_3]$

All individual items and the corresponding mean scores for each item are presented in Table 3.

Table 3. Mean score for individual items relating to confidence in coping, by measurement point

Items relating to confidence in coping, scored on a scale of 1–11	T0 (N = 130) Mean (SD)	T1 (N = 59) Mean (SD)	T1 (N = 40) Mean (SD)
1. How confident are you in working with an aggressive patient?	5.37 (2.04)	6.17 (1.80)	6.28 (1.77)
2. How well trained are you in managing psychological/verbal aggression?	5.13 (2.09)	6.29 (2.10)	6.15 (1.83)
3. To what extent are you able to intervene physically with an aggressive patient?	4.46 (2.38)	5.83 (2.41)	5.32 (2.79)
4. How self-assured do you feel when faced with an aggressive patient?	4.88 (2.11)	5.73 (2.02)	5.80 (2.10)
5. To what extent are you able to intervene psychologically/verbally with an aggressive patient?	5.79 (2.07)	6.68 (1.96)	6.83 (2.01)
6. How well trained are you in managing physical aggression?	3.88 (2.27)	5.58 (2.13)	4.97 (2.29)
7. How safe do you feel when near an aggressive patient?	4.92 (2.05)	5.76 (2.17)	5.78 (2.20)
8. How effective are the techniques you know for managing aggression?	4.78 (1.90)	6.20 (1.75)	5.95 (2.21)
9. To what extent are you able to meet the needs of an aggressive patient?	4.87 (1.70)	6.00 (1.84)	6.18 (1.88)
10. To what extent are you able to protect yourself physically from an aggressive patient?	5.05 (2.32)	5.97 (2.05)	5.83 (2.53)

Abbreviations: SD = standard deviation, T0 = pretest before the course, T1 and T2 = posttests

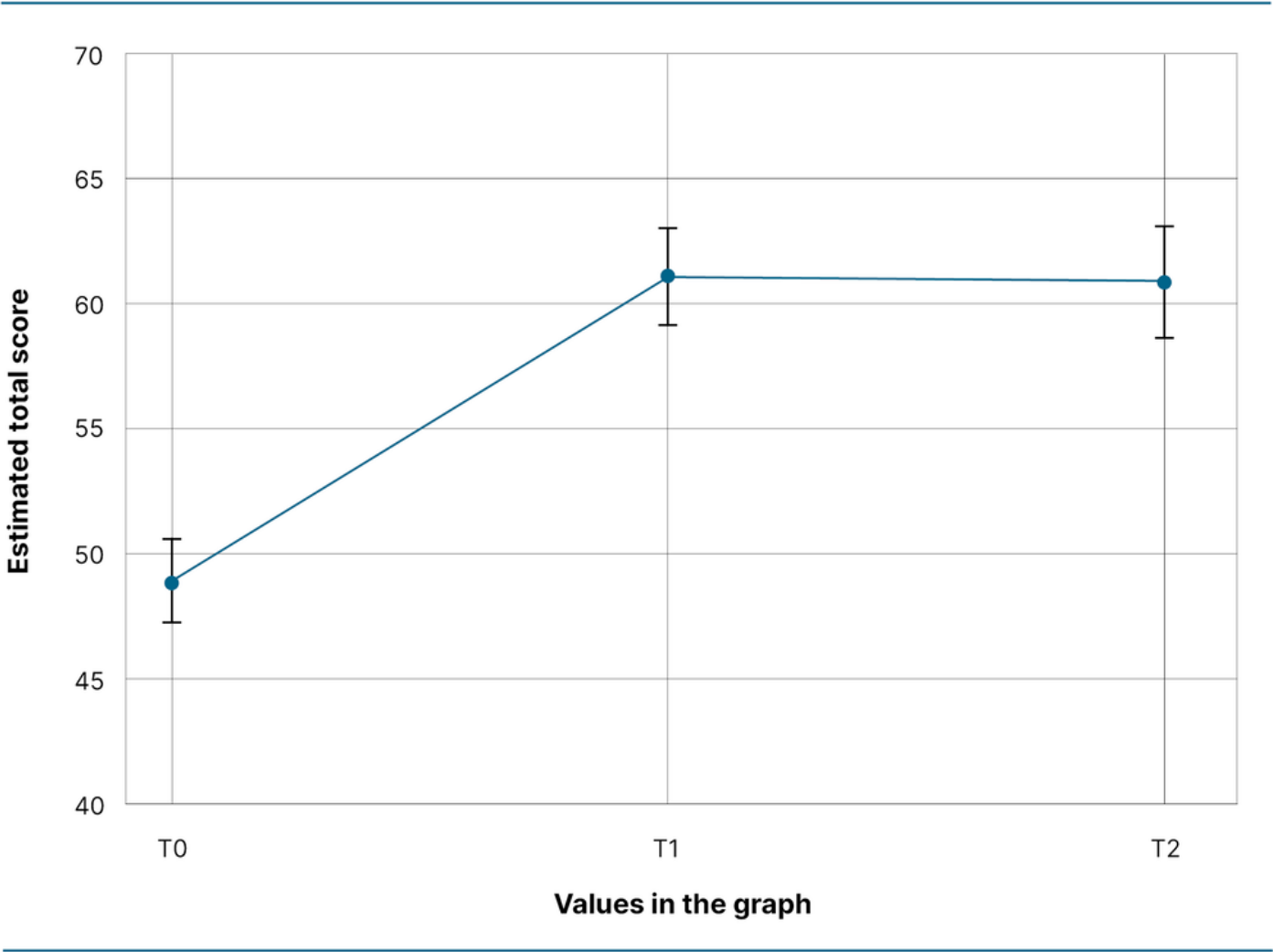
The results of the LMM analysis showed a statistically significant increase in confidence in coping over time (Table 4). The change from T1 to T2, however, was not statistically significant, meaning that the higher scores observed at T1 remained at a similar level at T2, four months after the course (Table 4) (Figure 1).

Table 4. Change in confidence in coping over three measurement points

			KI	
	Estimate	P-value	Lower	Upper
Baseline (T0)	48.98	< 0.001	45.77	52.19
Change T0–T1	12.13	< 0.001	8.78	15.47
Change T1–T2*	–0.23	0.906	–4.21	3.74

Abbreviation: CI = confidence interval
* T2 used as the baseline for calculating change T2

Figure 1. Change in confidence in coping over time



Large changes from T0 were observed at both T1 ($d = 0.84$) and T2 ($d = 0.82$) (Table 2).

Discussion

The study aimed to investigate whether MAP training increases confidence in coping with patient aggression among staff in the specialist health service. The training aims to reduce

aggression and violence while improving patient and staff safety and security (15).

Increased confidence in coping with patient aggression

The study specifically examined employee's confidence in coping with patient aggression. The results show a statistically significant increase in self-reported coping, at a level likely to have an impact on staff. These findings are consistent with those of similar studies (12, 13), which found that higher levels of confidence in coping were maintained four months after MAP training.

Research has shown that high self-efficacy is associated with better performance, both in the workplace and in sports (22, 23). These findings support the idea that belief in one's own abilities has a direct and measurable effect on actual performance.

In the clinical practice setting, Dunn et al. (24) suggest that self-efficacy plays an important role in how healthcare personnel handle challenging situations, such as patient aggression. Their study of psychiatric nurses showed that high self-efficacy was associated with more effective and safe management of aggression (24). This highlights the importance of strengthening healthcare personnel's self-efficacy.

Possible explanations for increased confidence in coping with patient aggression

One possible explanation for the increase in confidence in coping following MAP training is that it closely follows the recommended components for training in the prevention of workplace violence. According to Beech and Leather (25), MAP training courses should cover theories of violence, risk assessments, preventive measures, relational approaches and post-incident follow-up.

Another possible explanation is that participants have successfully applied the knowledge and experience gained on the MAP course. According to Bandura (16), behavioural changes are initiated as a result of acquired knowledge. Previous experiences of mastery also have a strong influence on an individual's self-efficacy (16). Thus, positive experiences with managing patient aggression may also have increased participants' confidence in coping. However, this was not further examined in the study.

A third factor that may have impacted on participants' confidence in coping is reduced stress and increased control. Stress and anxiety are physiological responses to danger, and MAP training includes elements of self-regulation with a view to managing threatening situations (15).

Bandura points out that self-efficacy is linked to control over thoughts, motivation and emotions (16), which in turn can be associated with lower stress levels. Confidence in coping makes it easier to respond to patient aggression in a professional manner (9, 15), whereas a lack of confidence can lead to inappropriate responses that can escalate conflicts (26, 27).

In summary, confidence in coping can reduce stress levels among staff, which in turn can reduce patient aggression and help prevent the escalation of threatening situations.

Increased confidence in coping can help protect against violence

A desired consequence of increased confidence in coping is that it can protect against the consequences of violence and threats. Research shows that confidence in coping can act as a buffer against burnout (24) and PTSD (28). We also identified studies showing associations between PTSD symptoms, emotional instability and an increased risk of work-related violence (29–31).

These findings suggest that staff with a high level of confidence in coping with patient aggression may be less exposed to violence and its negative consequences. However, this study found no evidence that increased confidence in coping reduces the exposure to aggression and violence.

Nevertheless, the results show that MAP training increases confidence in coping, which can act as a protective factor against burnout and PTSD, and in turn can reduce the risk of exposure to violence. This should be explored further in future studies in a Norwegian context.

The analyses of confidence of coping revealed an increase of approximately one point per item on the measurement instrument before and after MAP training. According to Thackrey (9), this indicates a realistic increase in self-assurance following training. Healthcare personnel require a realistic level of confidence in order to manage patient aggression in a professional and clinically appropriate manner (9).

However, Vancouver et al. (32) and Nau et al. (33) point out that confidence in coping in itself can lead to overconfidence and a greater risk of errors in judgment.

In their article, Vancouver and Kendall (34) note that confidence in coping can create a false sense of security if the necessary education, experience and motivation are lacking. They further argue that it can be difficult to determine whether increased confidence in coping is due to actual competence, belief in one's own abilities, or a combination of both (34). These considerations should be central to future research on confidence in coping with patient aggression.

Increased confidence in coping can have a positive impact on patients

Our study examined whether staff's confidence in coping with patient aggression increased following MAP training. Based on self-efficacy theory and available research, the findings of this study suggest that MAP training can enhance staff's confidence in coping, which in turn can have a positive impact on situations involving patient aggression.

However, we have no evidence to claim that increased confidence in coping among healthcare personnel would also be beneficial for patients. This would need to be investigated using experimental methods. However, a study by Dunn et al. (24) found an association between a

high level of confidence in coping in nurses and patient well-being. They reported that nurses with high levels of confidence in coping also felt most optimistic and experienced less of an emotional strain when interacting with patients (24).

Furthermore, Ozer and Bandura (35) argue that self-efficacy can reduce anxiety and feelings of vulnerability, which in turn shapes perceptions of risks and threats. Studies also show that anxiety and uncertainty can increase the likelihood of using coercive measures (36, 37), and that training in managing patient aggression can help reduce the use of coercion (38). It is therefore reasonable to assume that increased self-efficacy among staff may have a positive effect on aggressive patients.

Strengths and limitations of the study

The study has several limitations. The main weakness of a pre-post study design is the absence of a control group. Consequently, we cannot draw firm conclusions about the effect of MAP training. The study's findings must therefore be interpreted with caution.

Future studies with experimental designs and larger samples are recommended in order to draw reliable conclusions about the impact of MAP training. We also recommend examining a broader range of outcome measures, such as patient-reported outcome measures and the incidence of coercive measures and violent incidents following MAP training.

Loss to follow-up in the study was 69.3 per cent from T0 to T2, which could compromise the internal validity of the study. However, the study was strengthened by a loss to follow-up analysis that found no significant differences in age, percentage of full-time employment or workplace between participants who dropped out and those who completed the study.

The sample size in the study is relatively small due to the high loss to follow-up, which limits the generalisability of the findings. However, a strength of the study is the use of an LMM, which allows for the inclusion of missing data.

We had planned to conduct a regression analysis to examine whether experiencing violence after MAP training impacted on staff's confidence in coping. However, very few participants reported such experiences, so no regression analysis was conducted.

The strengths of the study include efforts to minimise potential systematic bias through consecutive sampling and longitudinal follow-up at the individual level rather than solely at the group level.

Conclusion

The results of this study indicate that MAP training increases participants' confidence in coping with patient aggression, and that this effect is sustained over time. This is beneficial for staff, as confidence in coping is associated with increased self-assurance, reduced anxiety and feelings of vulnerability, and can act as a buffer against burnout.

However, replication studies conducted over longer time periods, with larger samples and a control group, are needed in order to draw firm conclusions about the impact of MAP training. Whether it also improves patient care should be a key focus of future research. It would be useful to examine the impact of MAP from the patient perspective, as well as how staff training in MAP impacts on patients' experiences of health care.

Acknowledgements

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Conflicts of interest

- *The study was conducted on the initiative of Thomas Nag, who was the MAP training director at the start of the study.*
- *Anja Engh is a certified MAP instructor.*
- *All three authors of this study are employed by the organisation from which the data were collected.*

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IDENTIFYING TRIGGERS: The course teaches participants to recognise the warning signs of violence, use communication strategies to de-escalate aggression, and manage aggressive behaviour. *Illustration photo: Yuri Arcurs / Mostphotos*

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