Can Women Shelters Help Reduce Symptoms of PTSD and C-PTSD? Trajectories of PTSD Symptom Development Following Partner- and Family-Related Violence

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Abstract

Background

To protect women from IPV, women's shelters should not only provide emergency safety from IPV exposure, but also prolonged support that empowers women to build a life free from violence. The present study aims to investigate individual symptom development in association with residency at a women's shelter.

Method

Data was collected at four different timepoints, i.e., enrolment (T1, N = 150), 3-months residency (T2, = 110), 6-months residency (T3, N = 68), and after relocation (T4, N = 63). Women were included from four Danish women's shelters. The International Trauma Questionnaire (ITQ) was applied to test for posttraumatic stress disorder (PTSD) and Complex-PTSD (C-PTSD) at all timepoints. A paired sample t-test was used to test the mean symptom development, and a Latent Class Growth Analysis (LCGA) was applied to test for different classes of PTSD-trajectories. Logistic regression was applied to predict class membership from shelter-related variables and symptom severity, i.e., length of residency, psychological counselling, revictimization and key symptoms of C-PTSD.

Results

The prevalence of PTSD (31%) and C-PTSD (37.9%) was high at enrolment. Although t-tests suggested a significant decline in symptoms at follow-up, the LCGA revealed different classes of symptom development. The two-class model was found to be the best representation of data with low-symptom- and high-symptom profiles, respectively. Overall, the largest decline in symptoms occurred within the first three months of residency. Revictimization was high and was further found to predict class-membership. However, when included in a multiple regression only symptom severity predicted the high symptoms profile class.

Discussion

Psychological treatment focusing on PTSD and C-PTSD is important for the women's future well-being and safety. Reports on revictimization was alarmingly high, which emphasizes a continuing need to protect women from psychological violence within the shelters. These findings should be replicated in larger samples before we can draw any conclusion.

Keywords*. PTSD, C-PTSD, IPV, Women's Shelter, symptom development, LCGA.*

Introduction

Intimate partner violence (IPV) is a global public health problem. In high-income countries, physical and sexual IPV is estimated to affect almost one in four women, who have ever been in a relationship, and numbers are even higher for psychological violence (Black et al., 2011; EUAFR, 2014; World Health Organization, 2021). IPV can have severe health consequences including depression, anxiety, substance abuse, suicide ideation, low quality of life, and low self-esteem (Alsaker, Moen, & Kristoffersen, 2008; Golding, 1999; Lagdon, Armour, & Stringer, 2014). The most common mental health problem is posttraumatic stress disorder (PTSD), with 31-84% of female victims reporting clinically significant symptoms (Golding, 1999).

The severity and extent of global IPV makes it a societal problem and most high-income countries provide emergency safety to female victims through women's shelters. Women's shelters are historically interesting, seeing that they emerged from the Women's Rights Movement in the 1970ties, primarily driven by volunteers (UN Women, 2012). In the last four decades, however, they have continued to evolve and today, most shelters provide a specialized service to female victims of IPV, with financial support from the public sector. In the EU, The Council of Europe has undertaken several initiatives to prevent and protect women against violence. Through the Istanbul Convention, member states are obligated to ensure a sufficient number of women's shelters, with a minimum of one bed per 10.000 inhabitants. Women's shelters should not only provide emergency safety, but also long-term support that empowers women and rebuilds a life free from violence (Blank, Lesur, & Logar, 2015; Council of Europe, 2011).

To this day, no studies have documented the overall effect of the women' shelter intervention. Women's shelters represent complex interventions that are not compliant with a randomized controlled trial (Craig et al., 2008; Medical Research Council, 2000) and thus, it

is difficult to accommodate the increasing demand of documented effect from government officials (Jensen, Pedersen, Pejtersen, & Amilon, 2016). Instead, researchers have focused on follow-up assessments and within short-term shelter interventions, to learn more about the intervention outcomes following women's shelter residency.

Recent systematic reviews and meta-analyses have studied psychological interventions targeting IPV victims (Arroyo, Lundahl, Butters, Vanderloo, & Wood, 2017; Hameed et al., 2020; Trabold, Mittal, & McMahon, 2018; Warshaw, Sullivan, & Rivera, 2013). These studies suggest that psychological interventions are somewhat successful in improving mental health, and demonstrate a symptom decline for especially depression and anxiety. Overall, support was found for Cognitive Behavioural Therapies (CBT) with some studies suggesting large effects on various mental health outcomes (Arroyo et al., 2017; Warshaw et al., 2013; Trabold et al., 2018). Nevertheless, Warshaw et al. (2013) argued that despite promising results for trauma-focused treatments, most studies had very high retention rates from treatment, and women in shelters often left the shelters prematurely and droped out of treatment. Hameed et al. (2020) further stated that although psychological interventions are promising for reducing symptoms of depression and anxiety, there is less certainty about other outcomes likes PTSD and future saftety. Moreover, psychological interventions and treatment are not part of the standard service in most shelters and thus, despite the promising results, most IPV victims will not receive such treatment.

Some studies have documented significant mental health improvements in women after they had relocated from a shelter (Mertin & Mohr, 2001; Shaked, Dekel, Ben-Porat, & Itzhaky, 2020). Yet, the mental health consequences of IPV are often long-term and can become chronic (Cahill & Pontoski, 2005; Shaked et al., 2020). For example, McFarlane, Maddoux, Paulson, Symes, and Jouriles (2020) reported clinically significant PTSD symptoms in more than 25% of previous women's shelter residents, at seven years follow-up.

Such findings could possibly be explained by differences in abuse severity prior to shelter residence. However, Johnson, Zlotnick, and Perez (2008) found that PTSD mediates the relationship between IPV severity and psychosocial functioning, i.e., psychiatric severity, and loss of social and personal resources. PTSD was also associated with social adjustment, comorbid disorders, and effective use of community resources, when controlling for IPV severity (Johnson et al., 2008). Moreover, Perez and Johnson (2008) found PTSD to be a predictor of future violence after controlling for IPV severity at baseline. These findings highlight the harmful effect of PTSD and its significant effect on future safety and well-being of IPV exposed women.

In recent years researchers have emphasised individual differences in symptom development. Two studies have identified distinctive symptom profiles, by cluster- and latent profile analysis, with 10-20% of the IPV exposed women, exhibiting high-symptoms profiles (Hebenstreit, Maguen, Koo, & DePrince, 2015; Hughes, Cangiano, & Hopper, 2011). Another study identified varying needs profiles in a Dutch sample of female shelter residents. Four different classes were identified; the Low Needs Class (17%), the Practical Needs Class (24%), the Empowerment Needs Class (17%) and finally, the High Needs Class (41%). The High Needs Class was found to have significantly more symptoms of depression and PTSD (Jonker, Sijbrandij, & Wolf, 2012). Based on such findings, researchers argue that a flexible and victim-oriented approach is important and that a "one size fits all" intervention, does not consider individual needs (Goodman & Epstein, 2005; Hebenstreit et al., 2015; Hughes et al., 2011).

Most research on individual differences in IPV research is based on cross-sectional data. Therefore, more research is needed on individual differences in symptom severity and especially, symptom development in association with women's shelters residency. Women in shelters are a particular vulnerable and important group, as previous research have

demonstrated greater IPV severity (Saunders, 1994) and higher risk of PTSD (Jones, Hughes, & Unterstaller, 2001), compared with IPV exposed women in the general community. Furthermore, the ICD-11 will come into effect in 2022 and introduce the new Complex-PTSD diagnosis (C-PTSD). C-PTSD is said to reflect a more severe symptomatology following repeated and prolonged traumatic exposure and has previously been associated with IPV (Cloitre et al., 2018; Herman, 1992). C-PTSD is characterized by symptoms related to disturbances in self-organisation (DSO; i.e., emotion regulation, negative self-concept and disturbed relationships), in addition to the three core symptoms of PTSD (i.e., reexperiencing, avoidance and hyperarousal). To this day, no studies have included C-PTSD in association with shelter residency, or at follow-up after relocation.

To build on existing knowledge, the present study aims to identify individual patterns of PTSD symptom development in a sample of women's shelter residents. A latent class growth analysis (LCGA) will help identify PTSD trajectories with data from four different timepoints from enrolment to 3-months follow-up after relocation. A LCGA identifies an appropriate number of classes (i.e., subgroups) based on symptom severity and symptom development; Each class represent different symptom profiles, for example one subgroup of women may experience a large decline in symptoms, while another subgroup experience increasing symptoms. Once the model has estimated the number of classes, shelter related variables and symptom severity will be tested to see if they can predict class membership, i.e., if psychological counselling, length of residency, new episodes of violence (i.e., revictimization), or DSO-symptoms are associated with different symptom profiles. We expect to identify latent classes that differentiate on symptom development, with at least one class showing elevated symptoms at all timepoints. We further expect DSO-symptom severity at enrolment to predict less decline in PTSD symptoms across the four timepoints, as C-PTSD require long-term specialized treatment (Cloitre, 2015).

This is a prospective study of PTSD- and C-PTSD-symptom development among women staying at four Danish women's shelters, following exposure to IPV. Data was collected between May 2017 and July 2020.

Participants

A total of 150 women were included in the study. All included women had temporary residence at one of the four included women's shelters, following exposure to IPV. The response rate in the current study was 69.4%. Most women declined due to personal reasons. Of those who participated in the study, the response-rate was 58% at the last follow-up. The women had endured physical, psychological and sexual IPV before seeking help at one of the shelters. On average, the women had endured the violence for five years, before seeking residence at a shelter. For detailed background information and a thorough review of the exposure to violence using validated measures and associated mental health consequences, see Dokkedahl, Kristensen, Murphy, and Elklit (2021).

Measures

Background Information. The women were asked to indicate their age, job status (i.e., "working/self-employed", "student", "stay at home", "retired", or "other"), citizenship ("Danish" vs "non-Danish"), and for how long they had endured the violence (years).

International Trauma Questionnaire (ITQ). The ITQ is based on the ICD-11 and measures PTSD and C-PTSD (Cloitre et al., 2018). The ITQ is measured on a 5-point Likert scale from "*0 = Not at all*" to "*4 = Extremely*". Six items measured the three core symptoms

of PTSD (i.e., reexperience, avoidance and hyperarousal; range: 0-24), and another six items measured the DSO-symptoms, which, in addition to symptoms of PTSD, characterizes C-PTSD (i.e., affective dysregulation, negative self-concept and disturbed relationships; range: 0-24). Symptoms of a PTSD diagnosis requires the presence of at least one symptom from each of the three symptom clusters (minimum of one item scoring ≥ 2). Symptoms of a C-PTSD diagnoses requires full endorsement of all three PTSD symptoms and the presence of at least one symptom from each of the three DSO-symptom clusters (minimum of one item scoring ≥ 2; Cloitre et al., 2018). Cronbach's alpha was $\alpha = .74$ for the PTSD scale and $\alpha = .80$ for the DSO scale in this study.

Revictimization. In each follow-up questionnaire (T2, T3 and T4) the women were asked about new episodes of violence. Revictimization was registered by a dichotomous score (yes/no). If the women responded yes, they were asked to indicate whether they had experienced physical, psychological, sexual, economic, material, stalking and/or honour-related violence. However, for this study, revictimization was combined into a scale from "*0 = no violence*" to "*3 = new violence at all follow-up timepoints*".

Shelter related variables. Length of residency (total number of days) and whether the women had received any mental health counselling by a shelter psychologist, were registered for all participants. Since the Danish women's shelters do not offer psychological treatment the variable of psychological counselling was dichotomized according to whether the woman had spoken with a psychologist during her residency as "*0 = no*" and "*1 = yes*".

Procedure

The women were asked to fill out an extended questionnaire within the first ten days of their stay (T1). This questionnaire included in-depth questions about the violence the women had experienced, questions on previous trauma and mental health measures. Throughout their stay, the women filled out the mental health self-report measures every three months until their relocation from the shelter and again at three months follow-up, after their relocation from the shelters. Data was collected from a total of eight timepoints, however, due to dropouts and varying relocation times between the women, three follow-up times were included in the present study (T2, T3 and T4). A flow diagram illustrating the inclusion process is evident from Figure 1.

Approximately half the women in Danish women's shelters are from another country of origin than Denmark and many women were not fluent in Danish. Based on statistics on interpreter assistance from the previous years, Arabic was chosen as a second language in addition to English. Hence, the questionnaires were translated and proofread by a professional translation service. Unfortunately, only few English (3.3%) and Arabic (2.7%) speaking women choose to participate.

FIGURE 1 APPROXIMATELY HERE

Data Analysis

Descriptive statistics were applied to present sociodemographic information, shelter related variables, revictimization and PTSD and C-PTSD symptomatology across the four timepoints. Independent t-tests and Chi-square tests were applied for drop-out analyses, comparing women who completed the study with those who had dropped out at follow-up. Paired sample t-tests were further applied to test the change in mean symptoms from T1 to T4 and from T2 to T4.

A Latent Class Growth Analysis (LCGA) was applied to detect different classes of PTSD-trajectories within the sample. Previous research has demonstrated that a sample of $\geq$ 100 is sufficient for a LCGA with four timepoints, and sometimes as low as $\geq$ 50 (Hamilton, 2003). Missing data was handled using the full information maximum likelihood, which attempts to estimate each parameter by determining the values based on the likelihoods specified for all observations in the available data. This increases the likelihood of identifying the "true" model. An LCGA assumes that the variance- and covariance estimates of growth factors are fixed to zero. This allows the identification of distinct classes within the sample. In this study, covariates (i.e., duration of violence, job status and citizenship) on the intercept and slope, were included in the baseline model to better discriminate between classes. Models with distinct classes from one through six was then tested and the fit indices helped determine the best representation of the data. The loglikelihood and the three Information Criteria Akaike (AIC), Bayesian (BIC), and the Sample-Size Adjusted BIC (SSABIC) were all used to determine which model was the best fit, with a smaller value indicating better representation of the data. In this study, AIC, BIC and SSABIC all suggested that the 3-Class model was the best fit, however, the Lo-Mendell-Rubins test (LMR) indicated that the 3-Class model was not significantly better than the 2-Class model. Moreover, the Entropy-value indicated a better delineation of the 2-Class model (Jung & Wickrama, 2008).

After deciding on the 2-Class model, logistic regression using the R3STEP auxiliary variable approach was used to test predictors of class membership. First, the four auxiliary variables (i.e., psychological counselling, revictimization, length of residency and DSO-symptoms) were applied through simple regression. At a final step, all four auxiliary variables were included in a multiple logistic regression (Asparouhov & Muthén, 2013a, 2013b).

<p style="text-align:center;">**Results**</p>

Sociodemographic background information can be found in Table 1. The women included in this study had on average had residency at one of the four women's shelters for 202 days (SD = 148.5, range 6-644) and 79.3% had received at least some psychological counselling during their stay. More than half of the women continued to experience abuse, while staying at the shelter (53.6%), and another 38.1% experienced revictimization of violence in the three months following relocation. Moreover, 19.1% of the women experienced revictimization both during and after their stay. The different subtypes of revictimization are evident from Figure 2.

<p style="text-align:center;">TABLE 1 APPROXIMATELY HERE</p>

<p style="text-align:center;">FIGURE 2 APPROXIMATELY HERE</p>

<p style="text-align:center;">FIGURE 3 APPROXIMATELY HERE</p>

PTSD and C-PTSD Symptomatology

More than two thirds of the women met the criteria for either PTSD (31%) or C-PTSD (37.9%) at enrolment. Symptom development is evident from Table 2. A paired sample t-test demonstrated a significant fall in PTSD-, $t(61) = 8.1$, $p < .0001$, and DSO-symptomatology, $t(62) = 6.3$, $p < .0001$. At T4 follow-up after relocation, 23.8% met the criteria for PTSD and 4.8% met the criteria for C-PTSD. The primary reduction in symptoms occurred from T1 to T2 and thus, there were no significant symptom reduction from T2 to T4 for neither PTSD-, $t(59) = 1.3$, $p = .186$, nor DSO-symptoms, $t(59) = 1.5$, $= .142$.

<p style="text-align:center;">TABLE 2 APPROXIMATELY HERE</p>

Drop-out analyses

Women who completed the study after relocation were compared to women who dropped out on background information, symptom level at enrolment, and shelter-related variables. Independent t-tests did not find any significant differences between women who completed the study at T4, and women who dropped out on *how long they endured the violence*, t(114.8) = -.244, p = .808, *the length of their shelter residency*, t(120.9) = -1.80, p = .074, nor in their *PTSD and C-PTSD symptoms*, t(128.3) = 1.34, p = .184; t(133.7) = .316, p = .753, respectively. Chi-square analyses further demonstrated that there were no significant differences on job status, $\chi^2(4) = 8.24, p = .071$, citizenship, $\chi^2(1) = 1.96, p = .184$, and psychological counselling, $\chi^2(1) = 1.56, p = .228$.

Latent Class Growth Analysis

Results from the LCGA is presented in Table 3. A 2-Class model was found to be the best representation of the data. Compared with the 1-class model, the 2-class representation presented better test-statistics on the loglikelihood, AIC, BIC and SSABI, as they all decreased from Class 1. Moreover, the LRT also deemed the 2-Class to be a significant better representation of the data than the 1-Class (*p* = .001). In comparison, the 3-Class was not a significant better match than the 2-Class (*p* = .146). The Entropy of .75 of the 2-Class was at an acceptable level, compared with previous publications (Armour, Shevlin, Elklit, & Mroczek, 2012). Finally, classification probabilities were strong for each class. The probability of individuals in Class 1 belonging to Class 1 was .92 (.08 for Class 1 belonging to Class 2); The probability of individuals in Class 2 belonging to Class 2 was .94 (.06 for Class 2 belonging to Class 1).

TABLE 3 APPROXIMATELY HERE

The trajectories identified by the two classes revealed that Class 1 is characterized by fewer symptoms at intercept (M = 11.104) and a high decline in symptoms across all four timepoints (Slope = -2.972). Contrary, Class 2 is characterized by higher symptoms at intercept (M = 17.699) and a small decline in symptoms (Slope = -1.887). In Class 2, PTSD symptom decline a little from T1 to T2, but appear more stable from T2 to T4. The 2-Class model is illustrated in Figure 3. The parameter estimates for the two classes is evident from Table 4. For both Class 1 and Class 2 the slope significantly declines, which means that the fixed effect for Class 1 and Class 2, respectively, is adequate at explaining longitudinal changes. The intercept mean was significant, whereas the intercept variance was insignificant for both classes, which means that there was no significant variability in the individual intercept at T1 for either of the classes. The insignificant slope variance for both classes suggests that there was no significant variability around the slope mean across the different timepoints. The correlation between the intercept and the slope factors was insignificant, which indicates that there is no significant relationship between initial status and subsequent growth within each class. Finally, a t-test demonstrated that the two slopes for Class 1 and Class 2 were significantly different from each other, $t(106) = 2.18$, p = .03. Thus, indicating that there are significant differences in the trajectories for symptom development between the two groups.

FIGURE 3 APPROXIMATELY HERE

TABLE 4 APPROXIMATELY HERE

Prediction of Class Membership

Logistic regression was applied to predict class membership. Of the included predictors, simple regression did not find psychological counselling nor length of residency,

to be significant predictors (see Table 5). Contrary, new episode of violence, OR = 2.24 [1.2; 4.18], and DSO-symptoms, OR = 1.23 [1.1; 1.4], both predicted Class 2 membership. Finally, when a multiple logistic regression was applied, only DSO-symptoms were found to be a significant predictor of Class 2 membership, aOR = 1.16 [1.03; 1.3]. All OR's and aOR's are evident in Table 5.

TABLE 5 APPROXIMATELY HERE

Discussion

The present study aimed to identify individual patterns of PTSD symptom development in association with women's shelter residency. Several interesting findings were revealed in the results. The prevalence of PTSD (31%) and C-PTSD (37.9%) was high at enrolment, which is consistent with previous research (Golding, 1999). Overall, the women reported a significant decline in symptoms from T1 to T2, but from then on, the symptoms remained stable. At follow-up three months after relocation, a substantial proportion of the women still reported symptoms of PTSD (23.8%) and C-PTSD (4.8%). As evident from the LCGA (Figure 3), the high-symptom class (53.3%) reported a small significant decline in symptoms at T2, but then remained relatively stable with a high symptom-profile at all four timepoints. The low-symptom class (46.7%) also reported the largest significant decline in symptoms at T2, but then continued to have a small significant decline with a low-symptom profile across the three follow-up timepoints.

These results indicate that IPV exposed women have the largest decline in PTSD and C-PTSD symptoms, within the first three months of their shelter residency, which supports precious findings (Koci et al., 2014). The most important aspect of the women's shelter service is the emergency safety that the shelters provide. Hence, it is clinically meaningful that the women would benefit directly from the safe environment, while also receiving care and support from the staff. In continuation of this, previous research has demonstrated that a large proportion of trauma victims with PTSD symptoms, recover from spontaneous remission without receiving any treatment (Morina, Wicherts, Lobbrecht, & Priebe, 2014). Therefore, it was expected that a proportion of women would have a natural decline in symptoms.

Not only did the largest decline in PTSD-symptoms occur within the first three months of shelter residency, but length of residency was also found not to be a significant predictor

of class membership. Thus, there were no significant difference in length of residency between those with a high-symptom profile and those with a low-symptom profile. This supports previous findings, which have demonstrated that length of residency is not related to the women's functioning, including mental health, at four months follow-up (McFarlane, Symes, Maddoux, Gilroy, & Koci, 2014). In Denmark it is recommended that shelter residency should last for a minimum of three months (Ramboll, 2015). However, due to financial challenges and housing issues, many women end up staying much longer. In the present study, the average length of residency was a little more than six months, with some women staying almost two years.

Some researchers have suggested that length of residency is inversely related to revictimization after relocation (Perez, Johnson, Johnson, & Walther, 2012). However, the average length of residency in that study was just under two months and thus, well below the six months reported in the present study. Reports on revictimization in the present study were alarmingly high and therefore it is relevant to consider the appropriate length of residency not only in regard to PTSD symptom development, but also protection from revictimization. The present study does not support prolonged shelter residency in terms of symptom development outcomes, but more research is needed on revictimization. Especially since PTSD symptom severity has been linked with future revictimization (Krause, Kaltman, Goodman, & Dutton, 2006; Perez et al., 2012), and revictimization was a significant predictor of the high-symptoms profile class, in the present study.

The high incidence of revictimization, during and after residency, is concerning. The women primarily reported new episodes of psychological violence, which is likely explained by the physical barrier between the perpetrator and the woman that prevents physical acts. Historically, women's shelters emerged in a time when IPV was largely understood to be physical and sexual acts of violence (O'Leary, 1999). However, we now know that

psychological violence is not only the most common type of IPV (Black et al., 2011; EUAFR, 2014) but it can also have severe mental health consequences, equal to those of physical and sexual IPV (Dokkedahl, Kirubakaran, Bech-Hansen, Kristensen, & Elklit, submitted; Dokkedahl et al., 2021; Lagdon et al., 2014). Psychological violence can, among other things, continue via technology (i.e., phones, email, or social media; Leisring & Giumetti, 2014), or through harassment related to custody and other legal matters (Hardesty, 2002), which makes it difficult to protect the women. Legislators should recognize that abuse can happen within the system, as violence does not necessarily end with separation from the partner. Moreover, most research on cyber psychological violence has focused on adolescents and young adults (Leisring & Giumetti, 2014). Future research should focus on cyber psychological violence and how it interferes with women's shelter safety.

Psychological counselling did not predict class membership. This does not necessarily mean that psychological counselling does not have an effect on PTSD symptom development. It simply means that Class 1 was not more likely to have received psychological counselling than Class 2. More research should investigate psychological counselling and how it contributes to symptom development in women's shelter residents. Trabold et al. (2018) reported that based on a limited number of studies, advocacy-focused interventions had moderate effects on depression and PTSD. Although the women's shelters do not necessarily provide psychological interventions, the standard shelter care provide many of the same services that are associated with advocacy focused treatment, e.g., empowerment, social support, psychoeducation, financial counselling, community referrals and safety planning (Trabold et al., 2018; Ramboll, 2015). Previous research has demonstrated that short-term psychological interventions can have a large effect on PTSD symptoms (Arroyo et al., 2017; Johnson, Johnson, Perez, Palmieri, & Zlotnick, 2016). Particularly, Johnson et al. (2016) found PTSD treatment to have an effect, when added to the

standard shelter service. In the present study, 28.6% had symptoms of either PTSD or C-PTSD at follow-up, which indicate a need for trauma-focused treatment either during shelter residency or after relocation.

The present study contributes to existing knowledge. However, there are several important limitations. First of all, the study relied on self-report measures and not a clinical assessment of the symptoms. Second, the sample size was small, including a substantial dropout rate, considering the chosen methodology, which resulted in an Entropy of only .75. A larger sample would possibly have identified more classes, which would provide more information on individual symptom development among women's shelter residents. The authors recognize that these are essential limitations and thus, it is important to stress that the strength of this study lies in the explorative nature of the applied methodology. It would be beneficial for future research to replicate and expand on these findings, before we draw any final conclusions, to learn more about the individual differences in PTSD symptom development in association with women's shelter residency. Furthermore, the two predictors, psychological counselling and revictimization, were dichotomized or quantified to be included in the model. Therefore, more research is needed to differentiate how different subtypes of IPV, during and after the stay, affect symptom development. Moreover, future research should examine how supportive psychological counselling affect symptom development. On a final note, the authors regret the low participation rate of non-Danish speaking women. Future research should focus on this particular group, as they are unlikely to receive the same amount of care and support from staff, due to language barriers. This might put them at further risk of long-term mental health consequences and revictimization.

Despite the limitations described, this study has important clinical implications. PTSD and C-PTSD can cause severe functional impairment and is associated not only with comorbid mental health problems, but also educational impairment, unemployment,

interpersonal problems, future resource loss and revictimization (Brenner, Köllner, & Bachem, 2019; Johnson, Palmieri, Jackson, & Hobfoll, 2007; Johnson et al., 2008; Krause et al., 2006; Perez & Johnson, 2008). PTSD can become chronic, especially when untreated (Cahill & Pontoski, 2005). The introduction of the C-PTSD diagnosis further emphasizes the need for trauma-focused care, as C-PTSD require long-term specialized treatment (Cloitre, 2015). Thus, legislators should prioritize trauma-focused treatment for those women who exhibit severe PTSD and C-PTSD symptomatology. Moreover, social authorities should consider the appropriate length of residency, as it does not seem to affect PTSD symptom development, beyond the first three months. Finally, researchers and practitioners should be aware of revictimization and consider how we protect women from continuing psychological abuse through the legal system and electronic media.

Conclusion

The present study found a high prevalence of PTSD and C-PTSD among women enrolled at one of four Danish women shelters, following exposure to IPV. Moreover, a substantial amount of the women was still exhibiting symptoms of PTSD and C-PTSD at three months follow-up after relocation. Despite a significant mean decline in symptoms from enrolment to follow-up, a LCGA revealed a subgroup of women with a high-symptom profile across all timepoint. Using simple regression revictimization and symptoms severity (DSO-symptoms) predicted the high-symptom class, however, when all predictors were added in a multiple regression only symptom severity predicted the high-symptom profile. These findings should be replicated in larger samples before any conclusions can be made.

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Table 1

Sociodemographic Information: Age, Job Status, and Citizenship

Variables	%	M	(SD)	Range
Age		34.6	(10.1)	18-79
Job Status				
Working/self-employed	38.2			
Student	18.8			
Stay at home	4.2			
Retired	1.4			
Other*	37.5			
Citizenship				
Danish	74.3			
Non-Danish	25.7			

Note. M (SD) = Mean (Standard Deviation)
*Job searching, sick-leave or other social benefits.

Table 2

Symptom Development

	T1 (N = 150)		T2 (N = 110)		T3 (N = 68)		T4 (N = 63)	
	dx	M (SD)	dx	M (SD)	dx	M (SD)	dx	M (SD)
Symptoms								
PTSD	31.0	15.3 (15.4)	24.8	10.8 (5.6)	16.2	9.4 (5.5)	23.8	8.3 (6.2)
DSO	37.9	11.4 (6.1)	16.5	7.3 (5.2)	20.6	7.3 (5.8)	4.8	6.0 (5.5)

Note. dx = % of women fulfilling the symptom criteria for a PTSD or C-PTSD diagnosis.
M (SD) = mean and standard deviation of total symptom score.
NB: Of the participants who completed the questionnaire at T4 (N = 63), 27.1% reported symptoms of PTSD and 37.3% reported symptoms of C-PTSD at T1, for comparison.

Table 3

LCGA Fit Indices

Class	Loglikelihood	AIC	BIC	SSABIC	LRT	Entropy
1	-945.920	1915.841	1948.246	1910.326	-	-
2	-897.444	1824.888	1865.395	1817.994	90.533, p = .001	0.751
3	-887.661	1811.322	1859.931	1803.050	18.270, p = .146	0.692
4	-885.525	1813.050	1869.760	1803.400	3.989, p = .474	0.632
5	-883.227	1814.453	1879.265	1803.424	4.293, p = .256	0.711
6	-881.307	1816.614	1889.527	1804.206	3.585, p = .641	0.660

Note. AIC (Akaike Information Criterion), BIC (Bayesian Information Criterion), SSABIC (Sample-Size Adjusted BIC Information Criterion), LRT (Lo-Mendell Rubins Test).

Table 4

Parameter estimates for the LCGA

Class	%	Parameter	Coefficient	SE
1	46			
		Intercept mean	11.104[a]	.486
		Intercept variance	.262	.383
		Slope mean	-2.972[a]	.327
		Slope variance	.420	.255
		Intercept-Slope correlation	-.423	.848
2	54			
		Intercept mean	17.699[a]	.584
		Intercept variance	.305	.454
		Slope mean	-1.887[a]	.375
		Slope variance	.472	.229
		Intercept-Slope correlation	-.325	.916

Note. [a] Indicates significant coefficients

Table 5

Predictors of Class 2 Membership

Analysis	OR	95% CI
Simple logistic regression		
Psychological counselling	1.79	(0.67; 4.82)
Revictimization	2.24	(1.2; 4.18)
Length of residency	1	(1; 1)
DSO-symptoms	1.23	(1.1; 1.36)
	aOR	95% CI
Multiple logistic regression		
Psychological counselling	1.19	(0.25; 5.68)
Revictimization	1.78	(0.8; 3.96)
Length of residency	1	(1; 1)
DSO-symptoms	1.16	(1.03; 1.3)

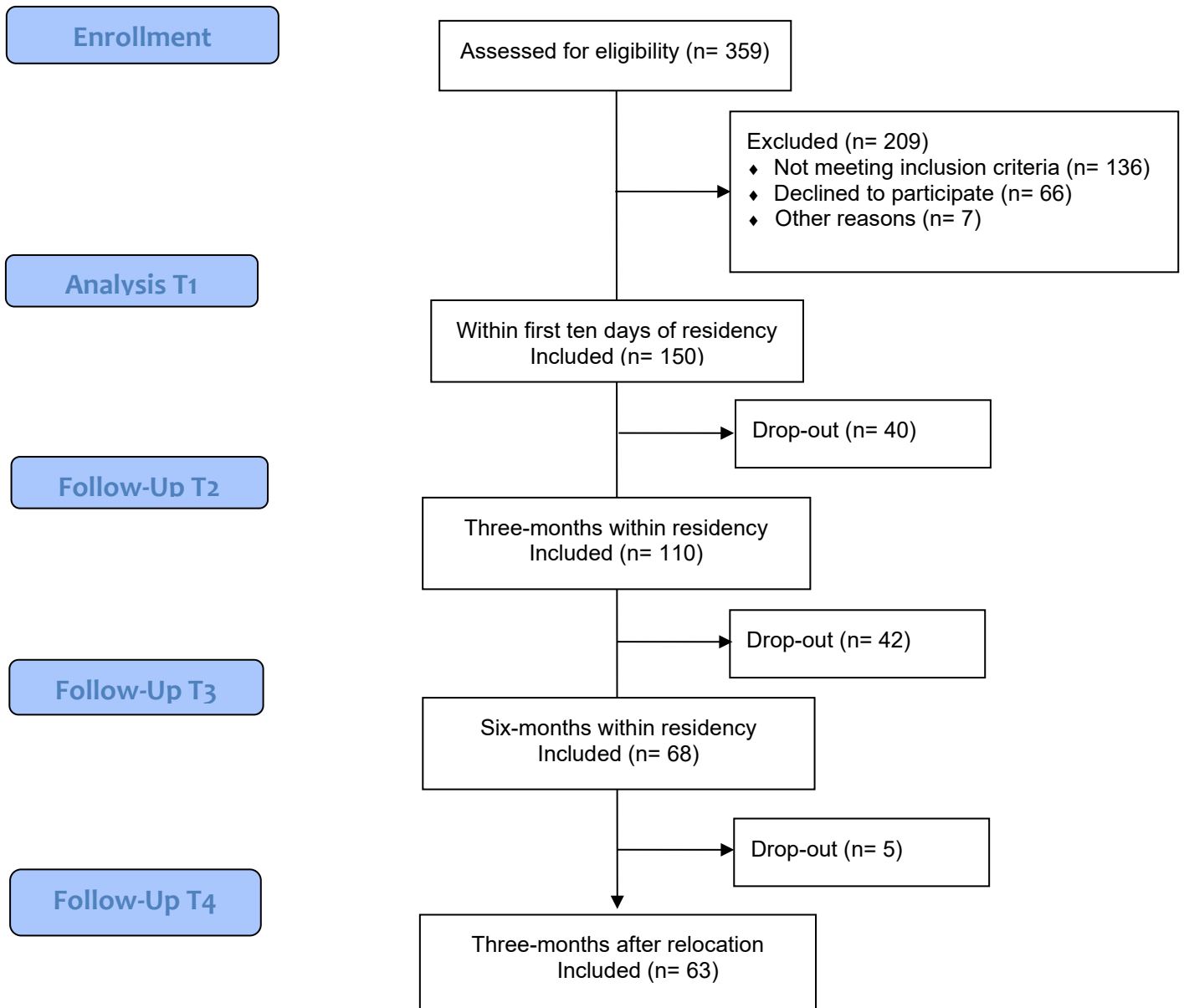*Note*. Odds Ratio (OR) and adjusted Odds Ratio (aOR)

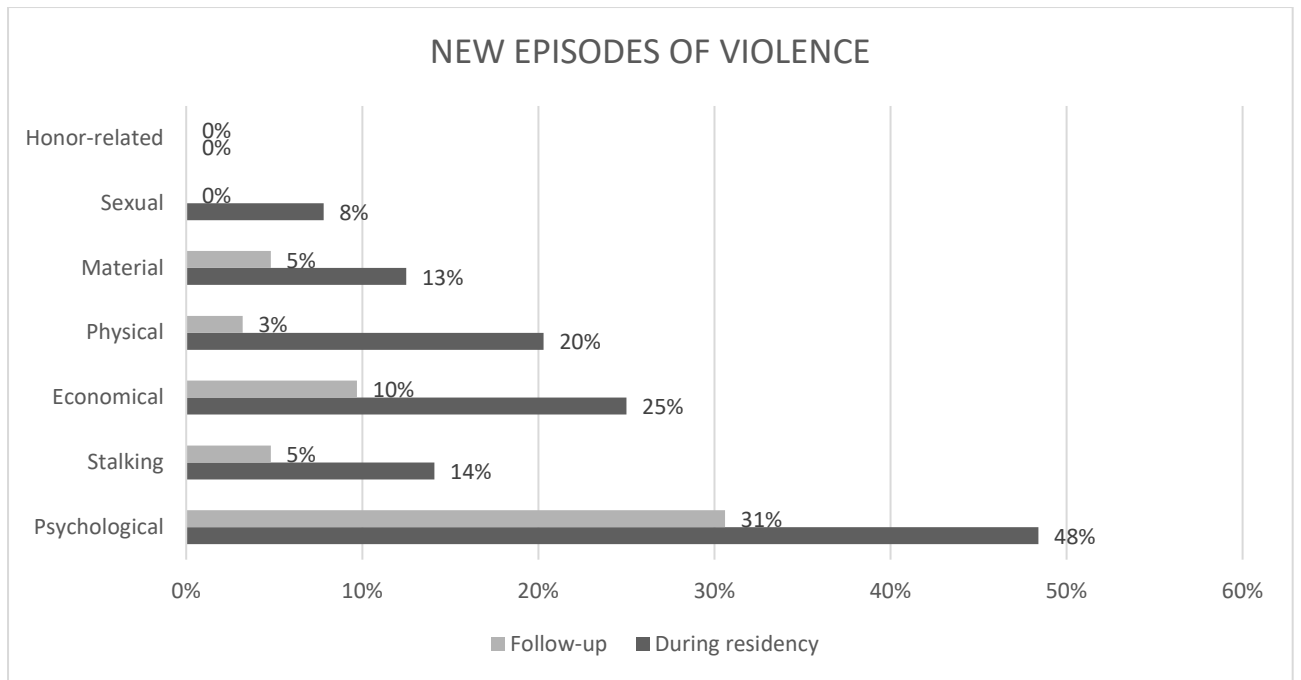*Figure 1.* Flow diagram illustrating the inclusion process.

Figure 2. Valid percentage of new episodes of violence during residency or at three months follow-up after relocation.
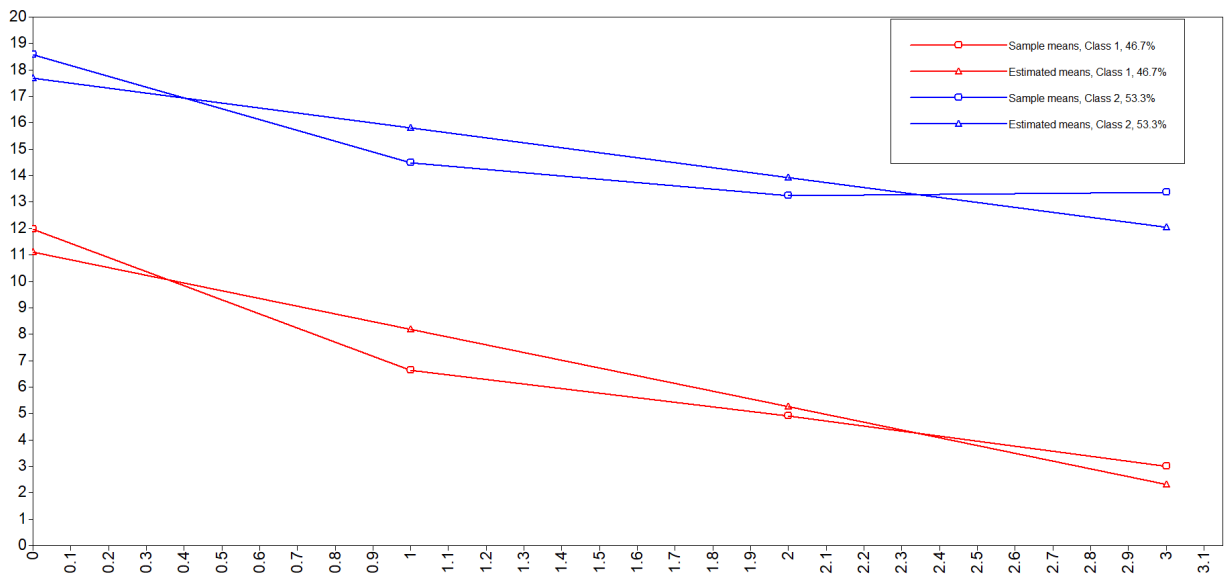
Figure 3. Graphic illustration of the 2-Class Model with sample means and estimated means for Class 1 and Class 2.