Samaphorn T, Prayuth P. Development and validation of a predictive scoring tool for family violence risk assessment. Pharmacy Practice. 2025 Oct-Dec;23(4):3356.

https://doi.org/10.18549/PharmPract.2025.4.3356

Original Research

Development and validation of a predictive scoring tool for family violence risk assessment

Samaphorn Theinkaw, Prayuth Poowaruttanawiwit

Received (first version): 22-Feb-2025 Accepted: 08-May-2025 Published online: 11-Nov-2025

Abstract

Background: Family violence remains a critical global public health concern, often underreported and undetected in clinical settings. Early risk identification is vital yet hindered by reliance on unstructured clinical judgment and insufficient screening tools. **Objective:** This study aimed to develop and validate a predictive scoring tool integrating individual, relational, and contextual factors to systematically assess family violence risk, thereby supporting earlier interventions. Methods: A cross-sectional observational study was conducted with 548 participants aged 30–59 years in Phitsanulok, Thailand. Data on personal history, relational dynamics, and community environment were collected through structured questionnaires. Bivariate and multivariate analyses identified key predictors of family violence. A weighted Family Violence Risk Score (FVRS) was constructed and internally validated using k-fold cross-validation and ROC curve analysis. **Results:** Major predictors included intergenerational exposure to violence (r = 0.77), rigid gender norms (r = 0.79), substance abuse (r = 0.74), emotional distress (r = 0.72), and financial hardship (r = 0.70). The FVRS demonstrated excellent discriminative ability (AUC = 0.97; 95% CI: 0.94–0.99). A cut-off score of ≥31 yielded a sensitivity of 94% and specificity of 72% for detecting any family violence. **Conclusions:** The developed FVRS offers a robust, evidence-based method for stratifying family violence risk, enabling proactive identification and intervention. Future studies should externally validate the tool across diverse populations and explore its integration into clinical practice to improve violence prevention strategies.

Keywords: Family violence, Risk assessment, Predictive scoring tool, Early intervention, Public health

INTRODUCTION

Family violence encompasses abusive behaviors within familial or intimate relationships, including intimate partner violence (IPV), child abuse, and elder abuse, manifesting as physical, sexual, emotional, or economic harm[1]. Globally, approximately one in three women have experienced physical and/or sexual violence by an intimate partner in their lifetime. In the United States, over one in three women (35.6%) and one in four men (28.5%) have experienced rape, physical violence, and/or stalking by an intimate partner in their lifetime[2,3]. These statistics highlight the pervasive nature of family violence across various societies, cultures, and socioeconomic groups[1-3].

Thailand is geographically divided into six regions: the Northern (9 provinces), Central (22 provinces), Northeastern (20 provinces), Eastern (7 provinces), Western (5 provinces), and Southern (14 provinces) regions. Recent national surveillance data highlight a significant rise in reported cases of family violence. Between October 2022 and September 2023, a total of 2,312 cases were documented, with women comprising 83.52% of the victims. The most frequently reported forms of violence included physical assault, psychological abuse, sexual violence, and fatalities. Regionally, the Northern region accounted for 13% of cases, ranking fifth among the six regions. In Phitsanulok Province, 196 cases of family violence were reported in 2022, with a trend indicating a progressive annual increase. Among the nine districts assessed, Mueang Phitsanulok District recorded the highest incidence of reported cases[4-8].

The consequences of such violence are severe, including acute injuries, chronic health problems, mental health disorders such as depression and post-traumatic stress disorder, and in extreme cases, fatal outcomes[9]. Family violence also incurs significant social and economic costs, including healthcare expenditures and lost productivity[10]. Despite its high prevalence and impact, early detection of family violence remains challenging. Many cases go unreported or unnoticed in clinical encounters, as victims may conceal abuse due to fear, shame, or lack of trust in authorities. Healthcare providers often do not screen routinely or thoroughly. Traditional approaches to identifying at-risk families have relied on unstructured clinical judgment or reactive measures after violence has already occurred[11]. This gap in early identification means opportunities for prevention are frequently missed. Notably, family violence is often repetitive in nature and tends to escalate over time if unaddressed. The repetitive nature of family violence suggests that proactive risk stratification is critical: recognizing warning signs and risk factors early could enable interventions that break the cycle of abuse. In Thailand, the government has implemented national policies aimed at eliminating violence against women and children, encouraging agencies across sectors to engage in prevention and intervention activities. Legislative reforms have also been introduced, notably the

Samaphorn Theinkaw. Ph.D. (Nursing), Assistant Professor, Boromarajonani College of Nursing Buddhachinaraj, Faculty of Nursing Praboromarajchanok Institute, Phitsanulok, Thailand, 65000, tsamaphorn2@gmail.com
Prayuth Poowaruttanawiwit*. Ph.D. (Clinical Pharmacy), Associate professor, Department of Pharmacy Practice, Faculty of Pharmaceutical Sciences, Naresuan University, Phitsanulok, Thailand, 65000, yuth_pu@hotmail.com

https://doi.org/10.18549/PharmPract.2025.4.3356

Domestic Violence Victim Protection Act of 2007, which affirms that women are entitled to state protection against domestic violence or unfair treatment without the necessity of filing a formal request. In this context, healthcare professionals—particularly nurses—serve as frontline providers who play a critical role in screening for domestic violence among women accessing health services. Early identification enables timely interventions that can mitigate the severity of violence and prevent further harm. Screening processes are essential for detecting both historical and ongoing abuse and for reducing the future risk of violence within this vulnerable population. To achieve comprehensive and effective care, the availability of specialized, validated screening tools is crucial in guiding nursing practice to appropriately address the unique needs of women experiencing family violence[4-7]. However, in practice, there have been significant gaps in early detection and risk stratification. Routine screening for domestic violence in healthcare settings has not been universally implemented, and even when screening is done, it typically identifies current victims rather than predicting future violence. The US Preventive Services Task Force now recommends routine IPV screening for women of reproductive age, reflecting a growing emphasis on early detection, but evidence of effective interventions following screening is still evolving[12]. Considering these challenges, there is a compelling need for a predictive scoring tool that can systematically assess family violence risk before severe harm occurs. Current risk assessment efforts are often focused on criminal justice settings or use of general checklists without quantitative weighting[13-16]. A predictive tool developed from epidemiological evidence can advance current knowledge by providing an objective, evidence-based method to stratify risk. This would represent a shift from relying on professional intuition to a more standardized approach, like how cardiology uses risk scores for heart disease. An effective family violence risk score could guide clinicians, social workers, and policymakers in targeting preventative resources to the families at highest risk. Moreover, it would incorporate the multifactorial nature of family violence, integrating personal history, behavioral patterns, and contextual factors into one comprehensive assessment.

Research Question

Can a predictive scoring tool, developed from epidemiological evidence, effectively stratify the risk of family violence in clinical settings, thereby facilitating early identification and targeted interventions for high-risk families?

Objective of the Study

To develop and validate a predictive scoring tool that systematically assesses the risk of family violence by integrating individual, relational, and contextual factors, aiming to enhance early detection and inform timely, tailored interventions in clinical practice.

METHODOLOGY

Study Design and Setting

We conducted a cross-sectional observational study in Phitsanulok, a mid-sized province in Thailand, to develop and internally validate a family violence risk scoring tool. Phitsanulok was selected due to its increasing reports of domestic incidents, providing a pertinent community context for the study. The research targeted adult respondents from both community and healthcare settings, aiming to encompass individuals with varying experiences of family conflict to capture a comprehensive range of risk profiles. Ethical approval was obtained from the Institutional Review Board (Boromarajonani College of Nursing Buddhachinaraj Research Ethics Committee), adhering to the Declaration of Helsinki guidelines for research involving human subjects. All participants provided written informed consent after receiving detailed explanations of the study's purpose and assurances of confidentiality. To ensure privacy and safety, interviews were conducted in private settings, and participants identified at risk of harm were referred to appropriate support services.

Participants

A total of 548 participants aged 30-59 years were enrolled using a stratified sampling approach. Both men and women were included to capture dynamics of both perpetration and victimization within families. The sample comprised community volunteers from local neighborhoods and patients or clients from hospital family medicine clinics and social service centers. Inclusion criteria required participants to be currently residing in a family setting (e.g., married/cohabiting or living with relatives) to ensure the relevance of "family" violence risk factors. To ensure sufficient representation of higher-risk cases, individuals from agencies dealing with family disputes, such as counseling centers, were intentionally oversampled. The final sample consisted of approximately 57% females and 43% males, with ages ranging from 18 to over 60, the majority being in their 30s and 40s. Participants reflected a broad socioeconomic spectrum, with a significant subset from lower-middle socioeconomic status; 53% were engaged in general labor occupations, and about 45% earned modest incomes (equivalent to over 10,000 THB per month). Just over half (53.3%) identified as the head of their household. In terms of cultural background, 85.6% were Buddhist, typical of the region. Regarding lifestyle factors, 19.5% reported some drug use, 43.3% reported at least occasional alcohol use, and the majority were non-smokers (90%). These baseline characteristics indicate a diverse mix of education levels, occupations, and lifestyle factors, providing a solid basis for analyzing risk correlates.

Data Collection Instruments

A structured questionnaire was developed to assess a range of potential risk factors for family violence, informed by existing literature and our theoretical framework. The instrument was divided into sections covering:

- Individual Factors: Age, gender, education, mental health status, personal history of childhood abuse or witnessing domestic violence.
- Relationship Factors: Marital satisfaction, presence of controlling behaviors, frequency of conflicts, substance

abuse within the household.

- Social/Community Factors: Social support availability, isolation, neighborhood crime or violence prevalence.
- Cultural/Attitudinal Factors: Attitudes toward gender roles, acceptance of violence, awareness of legal rights and resources.

Many items were adapted from validated surveys. For instance, childhood exposure to violence was assessed using items from the Adverse Childhood Experiences (ACE) questionnaire. Attitudes and norms were evaluated with statements rated on Likert scales, such as "It is acceptable for a husband to discipline his wife with force," aligning with measures used in WHO multi-country studies. Substance abuse was quantified by assessing the frequency of heavy drinking and any drug use. We also included items on knowledge of support systems, such as local hotlines or shelters, and previous use of intervention resources.

The primary outcome

Family violence involvement was measured in two ways:

1. Self-reported experiences: Participants reported physical, sexual, or severe emotional violence in the past year, either as victims or perpetrators, using behaviorally specific questions modeled on the Conflict Tactics Scale (CTS2) to improve disclosure accuracy.
2. Official or collateral reports: Information on whether the household had any police reports or protection orders filed was collected.

These measures were combined to classify each participant or family into a spectrum of violence severity (none, mild, moderate, severe) for analysis. To ensure safety, participants disclosing ongoing severe violence were privately helped after the survey.

Procedure

Trained researchers, including a psychologist and a social worker, administered the questionnaires in person. Given the sensitive nature of the topic, culturally appropriate approaches were employed to build rapport, and participants were assured that their responses would be kept confidential and used solely for research purposes. Surveys were conducted in Thai, with translations of standardized instruments where necessary; these were back translated to verify accuracy. Participants were interviewed individually and separately from family members to ensure candid and unbiased responses. Data collection underwent quality checks; for instance, random subsets of participants were re-contacted by a secondary team member to verify key responses, minimizing misinformation or interviewer bias.

Statistical Analysis

The primary analytic objective of this study was to identify independent predictors of family violence and construct a weighted, evidence-informed risk scoring tool. To ensure strong internal validity, the analysis followed a rigorous multi-step approach emphasizing control for confounding, stability of estimates, and appropriate modeling of the outcome variable. First, descriptive statistics were used to summarize participant demographics, prevalence of candidate risk factors, and distribution of family violence severity scores. Preliminary associations between individual predictors and family violence severity were examined using Pearson's correlation coefficient (r), appropriate given the predominantly ordinal or continuous nature of the predictors and the composite nature of the violence severity outcome. Correlation strength was interpreted using conventional thresholds: r = 0.10–0.29 (weak), 0.30–0.59 (moderate), and ≥0.60 (strong), with the direction indicating risk elevation. To identify variables with independent predictive value, multivariable modeling was conducted. Binary logistic regression was applied to model the presence or absence of any reported family violence, while ordinal logistic regression was used to model ordered severity outcomes. Predictor selection was guided by univariate significance, theoretical relevance based on prior research, and clinical interpretability. To ensure the stability and interpretability of regression coefficients, multicollinearity diagnostics were performed using Variance Inflation Factors (VIFs). All predictors retained in the final model demonstrated VIFs well below the conventional threshold of 5, indicating low multicollinearity and ensuring that the observed associations were not distorted by inter-correlated covariates. This step was critical to reinforce the internal validity of the scoring algorithm, minimizing bias due to overlapping constructs or redundant predictors. Model assumptions were verified, including linearity in the logit for continuous variables and proportional odds for ordinal outcomes. The final models were internally validated using k-fold cross-validation to estimate predictive performance and generalizability within the study sample.

Ethical Considerations

The research project (CoA No.005/2568 BCNB-REC No. 003/2567) was submitted for ethical review at the Human Research Ethics Center, Boromarajonani College of Nursing, Buddhachinaraj.

RESULTS

Participant Characteristics

In this study, we analyzed data from 548 participants to understand the demographic and behavioral factors associated with family violence. The cohort consisted of 57.2% females and 42.8% males, with the predominant age group being 31–40 years (36.6%). The average age was in the late 30s. A significant majority (85.6%) identified as Buddhist. Educational attainment varied: 30.4% held a university or college degree, 16.7% completed high school, and the remainder had primary or middle school education. Occupationally, 53.5% were engaged in general labor, 21.5% in government or public sector roles, and approximately 9% in state enterprises. Nearly half (45.5%) reported a monthly income exceeding 10,000 THB (approximately 300 USD), indicating a lower-middle-class income bracket. Just over half (53.3%) were heads of their

https://doi.org/10.18549/PharmPract.2025.4.3356

households. Regarding lifestyle behaviors, 80.5% reported no drug use, and 56.7% described their alcohol consumption as infrequent or rare. Only 10% were current smokers, typically consuming 6–10 cigarettes daily. Notably, about 30% had experienced some form of family violence in the past, either as victims, perpetrators, or witnesses. This spectrum ranged from minor conflicts to severe abuse, providing a comprehensive basis for developing and validating the risk assessment tool.

Risk Factor Correlations and Scoring Tool Development

This study identified multiple empirically ground predictors significantly associated with family violence severity, based on bivariate correlation analyses. Intergenerational exposure to violence (r = 0.77) emerged as one of the strongest predictors, reinforcing established models of cyclical violence transmission. Power imbalances and traditional gender roles within households demonstrated the highest correlation (r = 0.79), highlighting the critical role of structural inequity in facilitating abuse. Destructive behaviors, such as substance use and aggression, were also strongly associated with family violence (r = 0.74), aligning with existing behavioral and criminological literature. Emotional distress—including chronic fear, hopelessness, and depressive symptoms—was highly correlated with violence severity (r = 0.72), suggesting a potentially bidirectional relationship between psychological vulnerability and abuse. Economic strain, including unemployment, debt, and housing instability, also showed a strong correlation (r = 0.70), supporting socioeconomic theories of household stress and conflict. Broader contextual factors, such as cultural acceptance of violence (r = 0.66) and community violence exposure (r = 0.59), were moderately to strongly associated with family violence, emphasizing the relevance of social environment. Lack of awareness about available support services (r = 0.65) was also predictive, suggesting that informational barriers may delay help-seeking or escalation prevention. Educational attainment (r = 0.53) and community intervention behaviors (r = 0.35) were weakly correlated, indicating that while relevant, they exert a smaller independent effect. Based on these findings, we constructed the Family Violence Risk Score (FVRS), a weighted composite index in which each factor was scored on a 0–10 scale and multiplied by its assigned weight. Weights were derived from correlation strength and theoretical salience: high-impact variables (e.g., power dynamics, intergenerational exposure, destructive behavior, emotional distress, and financial strain) received weights of 9–10; moderate-impact variables (e.g., cultural norms, community context, and support awareness) received weights of 7–8; and lower-impact variables (e.g., education level, external support) were weighted between 3 and 5. The sum of weighted scores produced a Total Risk Score ranging from 0 to 95. Families were stratified into three empirically defined categories: low risk (0–30 points), representing 34% of the sample; moderate risk (31–60 points), 41% of families; and high risk (61–100 points), 25% of the population. These thresholds were selected based on score distribution and optimal sensitivity-specificity trade-offs for clinical and community triage.

Model Validation and Predictive Accuracy

The internal validity of the FVRS was evaluated through multiple methods. A strong linear association was observed between the Total Risk Score and family violence severity ($r = 0.82$, $p < 0.001$), providing initial construct validity. To assess criterion validity, binary logistic regression was applied to predict any reported violence, and ordinal logistic regression was used for graded violence severity outcomes. Variable multicollinearity was assessed using Variance Inflation Factors (VIFs), all of which were below 5, indicating that no significant multicollinearity was present among predictors and that independent contributions were preserved. Using a threshold score of ≥31 to identify any family violence, the tool achieved a sensitivity of 94% and specificity of 72%. For predicting severe violence (score ≥61), sensitivity remained high at 82%, and specificity increased to 88%, supporting clinical utility in differentiating at-risk populations. The ROC curve analysis (Figure 1) yielded an AUC of 0.97 (95% CI: 0.94–0.99), reflecting excellent discriminative performance and minimal misclassification. These findings confirm that the FVRS is a statistically robust, internally valid, and clinically meaningful tool. It enables structured risk stratification of families and supports early intervention strategies with a strong evidence base. The analytic process—including weighting strategy, multivariate adjustment, and rigorous diagnostic testing—reinforces the tool's integrity and its potential integration into routine screening and triage systems.

Interpretation of the ROC Curve and Predictive Performance

Figure 1 presents the ROC curve for the FVRS, illustrating its diagnostic performance in distinguishing between individuals at risk of family violence and those not at risk. The model yielded an AUC of 0.97 (95% CI: 0.94–0.99), indicating excellent discrimination. This means that in 97% of random case pairs, the scoring tool correctly ranks a high-risk individual above a low-risk one. In clinical terms, this reflects a near-optimal balance between sensitivity and specificity for early identification of at-risk families. The X-axis of the ROC plot represents the false positive rate (1 – specificity), while the Y-axis shows the true positive rate (sensitivity). The curve rises sharply at the beginning, achieving high sensitivity with minimal false positives—a highly desirable feature in public health screening, where early detection is critical. The steep initial slope suggests the tool is especially effective at correctly identifying high-risk individuals early in the scoring range. As the curve plateaus, further gains in sensitivity come at the cost of increased false positives, reflecting the classic trade-off between over-detection and under-detection. The diagonal gray line serves as a reference for a non-informative classifier (AUC = 0.50). The scoring tool's curve lies well above this reference line across all thresholds, underscoring its superior discriminative power. According to established interpretive ranges, AUC values of 0.90–1.00 are classified as excellent, further validating the tool's robustness for clinical and community use. From a practical standpoint, the FVRS's high sensitivity and specificity at key cut-offs (e.g., ≥31 for any violence and ≥61 for severe violence) demonstrate its suitability for triaging risk levels.

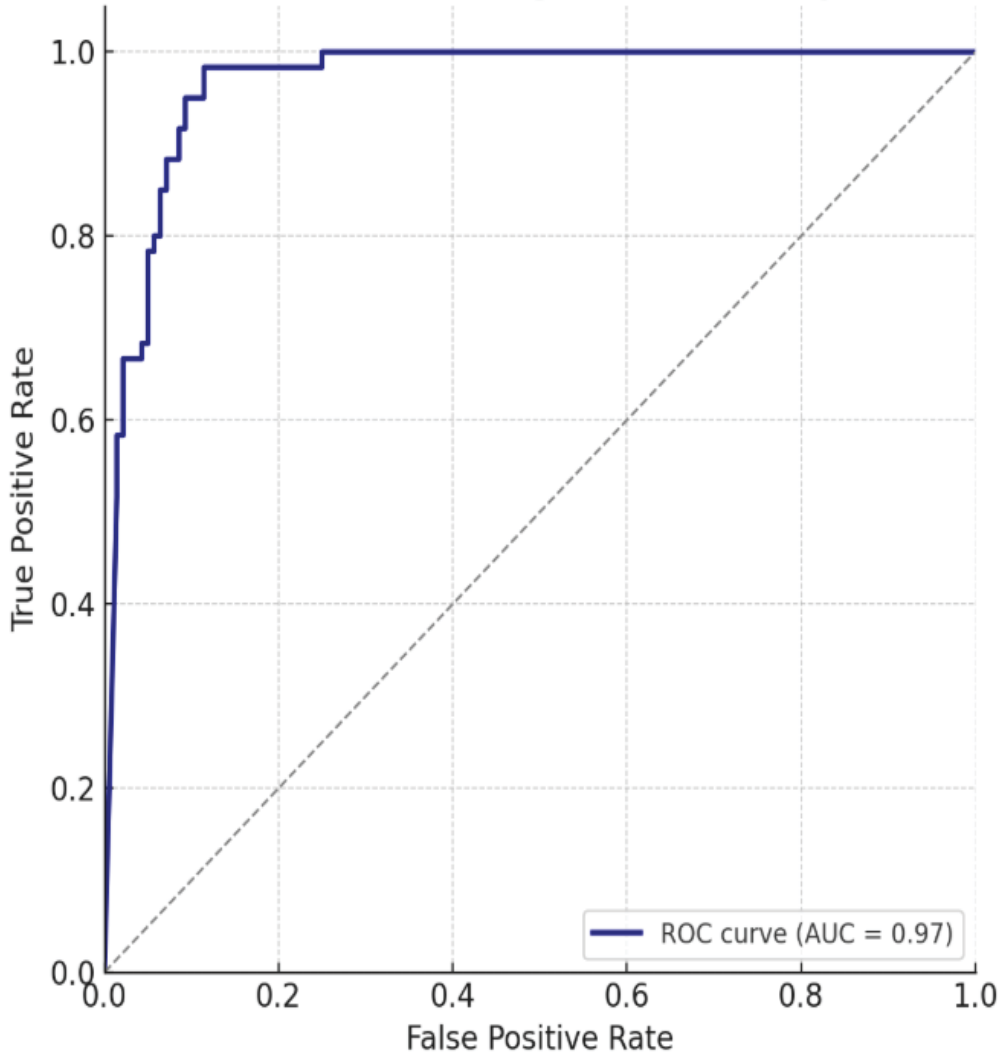

Figure 1. ROC curve illustrating the performance of the predictive scoring tool for family violence risk assessment

A lower threshold may be used in community outreach to maximize early intervention, while a higher threshold could guide intensive case management in clinical or forensic settings. These options allow flexible adaptation of the tool depending on resource availability and the desired balance between false positives and missed cases. The ROC curve confirms the FVRS's strong internal validity and operational accuracy. Its high AUC, early sensitivity gains, and minimal overlap with the random classification line make it a promising tool for proactive violence prevention, risk stratification, and targeted intervention in both healthcare and social service systems.

DISCUSSION

The present study reinforces and expands upon existing literature by integrating well-established risk factors—such as intergenerational exposure to violence, substance abuse, and economic stress—into a comprehensive predictive framework for family violence. Notably, the strong correlation between childhood exposure to violence (r = 0.77) and adult family violence underscores the profound impact of early life experiences on subsequent behaviors. This finding aligns with prior research indicating that individuals who witness domestic violence during childhood are significantly more likely to engage in abusive relationships as adults. This highlights the critical need for early interventions targeting at-risk families to disrupt the cycle of violence[21].

The prominence of power imbalances and rigid gender norms (r = 0.79) as top predictors aligns with sociocultural theories emphasizing patriarchal attitudes and control dynamics in domestic violence. Empirical evidence suggests that societies with higher acceptance of male-to-female aggression exhibit elevated rates of intimate partner violence (IPV), and relationships characterized by unequal decision-making power are more susceptible to abuse. Our findings provide quantitative support for these theories, illustrating how such factors can predispose families to violence.

The association between substance abuse and family violence (r ≈ 0.74) is well-documented; substances like alcohol are

known to impair judgment and escalate aggression, thereby intensifying domestic disputes. Our results corroborate these findings and justify the emphasis placed on substance-related incidents in various risk assessment tools. However, our comprehensive approach also identified instances where violence occurred without substance involvement, influenced by factors such as emotional stress and cultural norms, thereby demonstrating the value of a broad assessment[12-13,21] .

The strong correlation of emotional and psychological factors (e.g., fear, depression) ($r \approx 0.7$) reflects both causes and consequences within violent households. Chronic fear in victims can indicate ongoing intimidation by perpetrators and may also prolong abuse by diminishing victims' capacity to seek help. This observation aligns with clinical findings that victims experiencing severe trauma bonding or fear often remain in abusive situations longer. An intriguing insight from our study is the significant contribution of knowledge and awareness factors to risk levels. Families lacking awareness of support services or legal rights were more likely to experience prolonged violence. This suggests that enhancing public awareness and access to information could mitigate some risks—a consideration for intervention programs, such as community education campaigns. It also validates the inclusion of knowledge as a dimension in our tool, a factor often omitted in traditional risk assessments.

Relation to Existing Literature

Our study builds upon prior research and addresses existing gaps. Many previous risk assessment studies in domestic violence have focused on perpetrators' risk of reoffending. In contrast, our approach is more victim- and family-centric, aiming to identify risk before any criminal offense occurs. This complements instruments like the Danger Assessment, which focuses on extreme outcomes (e.g., femicide), by providing a continuum risk stratification for more common violence outcomes[13-16].

A key addition of our study is the incorporation of protective factors and knowledge into the model. Traditional tools often list only risk factors; we included elements like awareness and intervention behaviors, which function inversely—their presence can lower risk. This approach aligns with modern violence risk assessments that consider mitigating factors, potentially preventing the overestimation of risk in families with existing protective factors[17-21].

IPV assessment tools are pivotal in identifying and mitigating risks associated with domestic violence. Among the most utilized instruments are the Danger Assessment (DA), the Spousal Assault Risk Assessment Guide (SARA), and the Ontario Domestic Assault Risk Assessment (ODARA). The DA, developed by Jacquelyn Campbell in 1985, evaluates the likelihood of lethality in abusive relationships, aiding women in recognizing the severity of their situations and facilitating personalized safety planning. SARA, originating from the British Columbia Institute on Family Violence, comprises 20 items focusing on criminal history, psychosocial adjustment, and specifics of the alleged offense, aiming to predict both IPV occurrence and potential lethality. ODARA, on the other hand, is an actuarial tool designed to assess the risk of future domestic assault by male offenders against female partners, utilizing factors such as prior domestic assaults and substance abuse history[17-20].

Despite their widespread adoption, these tools present certain limitations. A significant challenge lies in their implementation across diverse real-world settings. A qualitative study involving Canadian professionals across various sectors revealed systemic, organizational, and individual-level obstacles in the application of risk assessment tools. These challenges include inconsistencies in tool utilization, lack of inter-agency collaboration, and the complexity of individual cases, which can impede the effectiveness of these assessments. Furthermore, in rural contexts, additional factors such as geographic isolation, limited access to resources, and cultural norms can exacerbate the difficulties in accurately assessing and addressing IPV risks. Another critical consideration is the emphasis on coercive control within risk assessments. Research indicates that factors associated with coercive and controlling behaviors—such as threats, controlling actions, sexual coercion, victim isolation, and fear—are highly indicative of the overall risk in IPV situations. However, traditional assessment tools may not adequately capture these nuanced behaviors, potentially limiting their predictive accuracy. Additionally, the integration of artificial intelligence (AI) into risk assessment practices has shown promise. For instance, an AI tool developed by Oxford researchers demonstrated an 84% accuracy rate in predicting harm in domestic abuse cases, surpassing traditional methods. This advancement suggests that incorporating AI could enhance the precision of risk assessments. To improve the efficacy of IPV risk assessment tools, several measures can be considered. First, enhancing the implementation process by ensuring consistent use across agencies and fostering inter-agency collaboration is crucial. Second, adapting tools to account for contextual factors, especially in rural settings, can lead to more accurate assessments. Third, incorporating elements that evaluate coercive control can provide a more comprehensive understanding of the risks involved. Lastly, integrating technological advancements, such as AI, may offer more precise predictive capabilities, thereby improving intervention strategies[17-21].

Cultural Adaptability and Broader Application

To ensure the effectiveness of this predictive scoring tool across diverse populations, cultural adaptability must be a central consideration. Although the tool was developed using data from Phitsanulok Province, its broader application within Thailand and in other countries requires careful attention to cultural norms, social dynamics, and local patterns of help-seeking. Elements such as family hierarchy, gender expectations, stigma surrounding domestic violence, and trust in healthcare systems can vary widely and influence how risk is recognized, disclosed, and addressed. For instance, in some rural Thai communities, victims may hesitate to report psychological or financial abuse due to cultural values emphasizing family preservation or concerns about social shame. In such contexts, certain risk indicators may need to be reworded, reweighted, or delivered

through trusted community health volunteers who are trained in trauma-informed communication. To enhance both accuracy and acceptability, the tool should undergo recalibration and pilot testing in different geographic and cultural settings. This process should involve collaboration with local healthcare providers, social workers, and community stakeholders to ensure contextual relevance. Additionally, adapting the tool into regional dialects or digital formats with culturally sensitive language and user-friendly design could improve engagement and accessibility. By embedding cultural adaptability into its implementation strategy, this tool can function as a scalable, ethically sound, and context-sensitive resource for family violence risk assessment—supporting more equitable and effective interventions across diverse health systems[4-7].

Our findings underscore the multifactorial nature of risk. No single factor was present in all violent cases; rather, different families exhibited various combinations of risk factors. This reinforces the value of an aggregated scoring system capable of capturing diverse risk profiles, reflecting the interplay of developmental and contextual factors in intimate partner violence.

Strengths of the Study

Studying possesses several strengths. First, the relatively large sample size (n=548) and inclusion of a community-based sample enhance the generalizability of our findings. The inclusion of both genders and a range of family relationships extends the tool's relevance beyond partner violence to encompass broader family violence contexts. Second, our comprehensive approach examined a wide array of potential predictors, allowing us to assess the comparative importance of various factors and construct a holistic tool. Third, our methodology combined quantitative rigor with practical tool construction. Internal validation using a holdout sample strengthens confidence in the tool's reliability, and its user-friendly design facilitates adoption by non-research professionals.

Limitations

Despite its contributions, this study has important limitations. One key limitation is its cross-sectional design, which captures risk factors and violence occurrence concurrently, thereby limiting the ability to establish causality. While we infer predictive utility from strong associations and logical temporal ordering, longitudinal studies are necessary to confirm the tool's prospective predictive validity and capacity to forecast future incidents of violence.

Second, the study relied on self-reported data, which introduces the potential for recall bias, social desirability bias, and under-reporting—particularly in sensitive domains such as intimate partner violence and substance use. Although confidential interviews and validated instruments were employed to reduce this bias, the risk of conservative prevalence remains. Moreover, certain critical variables were not included in the model. For instance, the mental health status of perpetrators or victims, and access to firearms—a known high-risk factors in many contexts, were not assessed. The absence of such variables may reduce the comprehensiveness and contextual adaptability of the tool, especially when applied in countries where these risk factors are more prevalent. Third, the cultural context must be considered. The study was conducted in Phitsanulok Province, Thailand, and the baseline risk environment, cultural norms, and service structures may differ significantly in other regions. As such, generalizability is limited, and the tool may require recalibration and external validation in diverse populations before broader application. Lastly, while the tool demonstrated strong internal validity, it has yet to undergo external validation or be tested in operational settings. Its performance should therefore be interpreted cautiously until confirmed by prospective evaluations. Furthermore, successful implementation will require standardized training, clear scoring guidelines, and integration into multidisciplinary workflows to ensure consistent and ethical application in real-world practice.

Future Directions and Clinical Implications

The development of this predictive scoring tool addresses a persistent gap in the clinical response to family violence by translating heterogeneous risk indicators into a structured, reproducible assessment. Frontline clinicians, including family physicians, psychiatric nurses, emergency practitioners, obstetrician-gynecologists, and community pharmacists—frequently encounter patients in whom risk is plausible but difficult to appraise under time pressure and within trauma-sensitive constraints. By organizing key domains (individual, relational, community, cultural) and explicitly incorporating protective factors as inverse contributors, the instrument promotes consistent judgments while mitigating risk inflation. Internal validity is strengthened through theory-informed variable selection, multivariable modeling with collinearity checks to preserve independent effects, and internal validation of discrimination and calibration using prespecified thresholds. Standardized outcome ascertainment and a predefined safety-referral pathway further reduce under-reporting and performance bias in this sensitive context. To enhance transparency and facilitate replication, we recommend publishing a succinct variable dictionary listing each FVRS item with its 0–10 score range and weight and quantifying the marginal influence of protective factors on total score, misclassification, and reclassification.

Generalizability and implementation require deliberate next steps. External validation across diverse settings—primary care, maternity services, emergency departments, psychiatric clinics, and community pharmacies—should evaluate transportability, cultural adaptability, and operational feasibility, including calibration drift and threshold performance over time. Embedding the tool in a digital workflow (mobile or web) with automated scoring, decision support (e.g., safety plan prompts), and secure referral links (e.g., OSCC) can enable real-time use; however, this should be coupled with implementation research, standardized training, and trauma-informed, privacy-preserving protocols. Role-specific deployment is plausible: nurses can lead proactive screening and care coordination in ER/ANC/OPD and mental-health clinics, whereas pharmacists—often first-contact and longitudinal providers—can apply a brief

https://doi.org/10.18549/PharmPract.2025.4.3356

triage, deliver discreet counseling, and initiate safe referrals. Decision-curve analysis, cost-effectiveness, and equity monitoring (subgroup calibration and false-positive rates) should inform threshold selection for routine practice. Taken together, this approach has the potential to improve early detection, strengthen clinical decision-making, and create a seamless safety network across hospital and community care—if competency development, governance, and prospective multicenter validation confirm durable clinical utility.

Real-world impact requires more than promise—it requires safeguards and proof. This includes transparent governance with predefined protocols (ethics, data security, and escalation pathways), prospective multicenter external validation to confirm transportability and calibration over time, and role-specific competency development for all frontline providers. Training should be standardized, assessed, and refreshed regularly, with particular investment in nurses—who often coordinate screening, safety planning, and follow-up—to ensure timely and appropriate support. Ongoing monitoring (e.g., decision-curve analysis, threshold audits, subgroup error rates) and feedback loops should guide updates to workflows and thresholds, maintaining accuracy, equity, and clinical utility across settings.

CONCLUSION

This study presents the development and internal validation of a predictive scoring tool for assessing the risk of family violence, grounded in empirical evidence and clinically observable indicators. By synthesizing multidimensional risk domains—including prior exposure to violence, relational power imbalances, substance use, psychological distress, and economic adversity, the tool enables structured, quantitative risk stratification across low, moderate, and high-risk categories. Its strong discriminative ability suggests significant utility in supporting early identification and guiding clinical decision-making, particularly in time-constrained or resource-limited settings. The tool's structured format offers clinicians a pragmatic alternative to informal judgment, providing a standardized approach for assessing violence risk and prompting timely referral or protective interventions when indicated. Its integration into routine healthcare encounters—such as antenatal visits, mental health consultations, and pediatric appointments—could normalize inquiry into family violence and embed prevention into frontline care delivery.

To realize its full potential, the tool should undergo external validation in diverse cultural and healthcare contexts and be accompanied by implementation protocols that emphasize trauma-informed communication, clinician training, and secure pathways to social and legal support services. Future research should also explore its longitudinal predictive value, adaptability to subtypes of violence (e.g., elder abuse), and the psychological impact of risk disclosure on affected individuals. With continued refinement and evaluation, this predictive scoring tool may serve as a scalable, evidence-based instrument for shifting family violence response from reactive crisis management to proactive, preventive care—ultimately supporting safer families and more resilient health systems.

Acknowledgements:

1. Boromarajonani College of Nursing Buddhachinaraj, Faculty of Nursing, Praboramarajchanok Institute, Phitsanulok 65000, Thailand.
2. Fourth-year Nursing Students (Group 3), Boromarajonani College of Nursing Buddhachinaraj, Faculty of Nursing, Praboramarajchanok Institute, Phitsanulok 65000, Thailand, academic year 2024.
3. Medical and Pharmacy Innovation Research and Development Unit, Faculty of Pharmaceutical Sciences, Naresuan University, Phitsanulok 65000, Thailand.

Declaration of Conflict of Interest

The authors declare no potential conflicts of interest with respect to the authorship and/or publication of this article.

Funding

The authors declare that they received no financial support for their research and/or authorship of this article.

Contributions:

Samaphorn Theinkaw (first author) led the conceptualization and co-developed the study methodology with Prayuth Poowaruttanawiwit (corresponding author). Samaphorn designed and refined the study instruments and operationalized the predictors, oversaw investigation and fieldwork, curated and verified the dataset, prepared visualizations, drafted the original manuscript, and managed project administration (including IRB coordination, timelines, and documentation). Prayuth directed formal statistical analysis and coding, led internal validation and sensitivity/threshold analyses, provided scientific supervision and quality assurance, and guided the technical and policy framing during review and editing. Both authors contributed resources and site coordination, approved the final manuscript, and Prayuth served as guarantor, accepting responsibility for the integrity of the work, access to the data, and the decision to publish.

References

1. Mazza M, Marano G, Del Castillo AG, Chieffo D, Monti L, Janiri D, Moccia L, Sani G. Intimate partner violence: A loop of abuse, depression and victimization. World J Psychiatry. 2021;11(6):215–221. doi:10.5498/wjp.v11.i6.215.
2. UN Women. Global Database on Violence against Women [Internet]. New York: UN Women; [cited 2025 Mar 15]. Available from: https://data.unwomen.org/global-database-on-violence-against-women
3. The National Domestic Violence Hotline. Domestic Violence Statistics [Internet]. Austin, TX: The Hotline; [cited 2025 Mar 15]. Available from: https://www.thehotline.org/stakeholders/domestic-violence-statistics/
4. Center of Operations for Women's Affairs and Family Institution. Report on assistance for victims of domestic violence, fiscal year 2023. Bangkok: Center of Operations for Women's Affairs and Family Institution; 2023. (In Thai)
5. Department of Provincial Administration. Registration statistical system [Internet]. 2024 [cited 2025 Apr 28]. Available from: https://stat.bora.dopa.go.th/stat/statnew/statMenu/newStat/home.php
6. Office of Social Development and Human Security, Phitsanulok Province. Report on protection outcomes for victims of domestic violence, Phitsanulok Province, fiscal year 2023 [Internet]. 2023 [cited 2025 Apr 28]. Available from: https://anyflip.com/lksds/sbli
7. Office of Social Development and Human Security, Phitsanulok Province. Stop violence against with ESS Help Me system [Internet]. 2024 [cited 2025 Apr 28]. Available from: https://anyflip.com/lksds/sbli
8. Chaiyan O. Situation of domestic violence in Phitsanulok Province, fiscal year 2023 [Internet]. Phitsanulok: Office of Social Development and Human Security, Phitsanulok Province; 2023 [cited 2025 Apr 28]. Available from: https://anyflip.com/lksds/sbli
9. Bell CJ, Curry SJ, editors. Essential Health Care Services Addressing Intimate Partner Violence. Washington (DC): National Academies Press (US); 2024. Appendix B, Health Effects of IPV on Individuals Experiencing IPV Across the Lifespan. Available from: https://www.ncbi.nlm.nih.gov/books/NBK605462/
10. Peterson C, Kearns MC, McIntosh WL, Estefan LF, Nicolaidis C, McCollister KE, Gordon A, Florence C. Lifetime economic burden of intimate partner violence among U.S. adults. Am J Prev Med. 2018;55(4):433–444. doi:10.1016/j.amepre.2018.04.049.
11. Yaxley R, Norris K, Haines J. Psychological assessment of intimate partner violence. Psychiatr Psychol Law. 2017;25(2):237–256. doi:10.1080/13218719.2017.1356211.
12. Curry SJ, Krist AH, Owens DK, Barry MJ, Caughey AB, Davidson KW, Doubeni CA, Epling JW Jr, Grossman DC, Kemper AR, Kubik M, Kurth A, Landefeld CS, Mangione CM, Silverstein M, Simon MA, Tseng CW, Wong JB. Screening for intimate partner violence, elder abuse, and abuse of vulnerable adults: US Preventive Services Task Force final recommendation statement. JAMA. 2018;320(16):1678–1687. doi:10.1001/jama.2018.14741.
13. Campbell JC, Webster DW, Glass N. The danger assessment: validation of a lethality risk assessment instrument for intimate partner femicide. J Interpers Violence. 2009;24(4):653–674. doi:10.1177/0886260508317180.
14. Belfrage H, Strand S, Storey JE, Gibas AL, Kropp PR, Hart SD. Assessment and management of risk for intimate partner violence by police officers using the Spousal Assault Risk Assessment Guide. Law Hum Behav. 2012;36(1):60–67. doi:10.1037/h0093948.
15. Turner E, Brown G, Medina-Ariza J. Predicting domestic abuse (fairly) and police risk assessment. Psychosoc Interv. 2022;31(3):145–157. doi:10.5093/pi2022a11.
16. Allard V, Higgs T, Slight M. Psychometric properties of the Spousal Assault Risk Assessment from samples of people having perpetrated intimate partner violence. Trauma Violence Abuse. 2024;25(5):3777–3795. doi:10.1177/15248380241262275.
17. Kilvinger F, Rossegger A, Urbaniok F, Endrass J. Risikokalkulation bei häuslicher Gewalt [Risk assessment for domestic violence]. Fortschr Neurol Psychiatr. 2012;80(6):312–319. doi:10.1055/s-0031-1273200.
18. Myhill A, Hohl K. The "golden thread": Coercive control and risk assessment for domestic violence. J Interpers Violence. 2019;34(21–22):4477–4497. doi:10.1177/0886260516675464.
19. Youngson N, Saxton M, Jaffe PG, Chiodo D, Dawson M, Straatman AL. Challenges in risk assessment with rural domestic violence victims: Implications for practice. J Fam Violence. 2021;36(5):537–550. doi:10.1007/s10896-021-00248-7.
20. Youngson N, Saxton M, Jaffe PG, Kielt L, Olszowy L, Dawson M, Straatman AL. Domestic violence risk assessment research to real-world practice: The devil is in the implementation. Violence Vict. 2022;37(4):425–440. doi:10.1891/VV-2021-0129.
21. Garcia-Vergara E, Almeda N, Fernández-Navarro F, Becerra-Alonso D. Risk assessment instruments for intimate partner femicide: A systematic review. Front Psychol. 2022;13:896901. doi:10.3389/fpsyg.2022.896901.