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Patterns of gendered risk factors and associations with intimate partner violence and low educational attainment among adolescent girls and young women in Lesotho: A latent class analysis

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Abstract

Background: Globally, adolescent girls and young women (AGYW) are disproportionately impacted by economic, demographic, and social factors associated with a wide range of negative outcomes.

Objective: The objective of this study was to use latent class analysis (LCA) to identify groupings of AGYW in Lesotho based on patterns of gendered risk factors, and to assess the association between the identified groupings and intimate partner violence (IPV) and low educational attainment.

Participants and setting: Data were from the 2018 Lesotho Violence Against Children and Youth Survey. AGYW reported gendered risk factors: teen pregnancy, child marriage, intergenerational sex, early sexual debut, being HIV positive, transactional sex, endorsement of one or more negative traditional gender norms, and one or more norms supportive of violence against women.

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Declaration of competing interest

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

Methods: LCA identified latent classes of eight gendered risk factors. Multivariable logistic regression assessed associations between latent classes and IPV victimization and low educational attainment.

Results: A three-class solution was selected, and classes were named as: Low Risk class, Behavioral Risk class, and Attitudinal Risk class. Odds of low educational attainment and IPV were higher in the Attitudinal Risk class than the Low Risk class. Odds of low educational attainment and IPV were higher in the Behavioral Risk class than the Low Risk class and the Attitudinal Risk class.

Conclusions: In Lesotho, gendered risk factors form distinct classes that have variable associations with low educational attainment and IPV. LCA can be an important approach to better understand the complicated relationship gendered risk factors have with each other and with certain outcomes, to further elucidate the influence that gender has on the health of AGYW and to provide more targeted prevention programming.

Keywords

Latent class analysis; Gendered risk factors; Education; Intimate partner violence; Lesotho; AGYW

1. Introduction

Globally, adolescent girls and young women (AGYW) are disproportionately impacted by economic, demographic, and social factors associated with a wide range of negative health and social outcomes. In many countries, gender intersects with social determinants of health, resulting in factors such as child marriage and early pregnancy that are associated with poor health outcomes and lower educational attainment (Nour, 2009; WHO, 2004). Gender and socioeconomic inequalities also result in girls and young women's higher risk of sexual behaviors associated with human immunodeficiency virus (HIV) acquisition and violence (Cluver et al., 2011; Leclerc-Madlala, 2008). In Eastern and Southern Africa, AGYW represent a disproportionate burden of new HIV infections (UNAIDS, 2021), and in Lesotho, HIV prevalence among young women aged 20–24 is more than five times higher than among their male counterparts (ICAP Columbia, 2021). Gender also appears to moderate the relationship between certain risk factors and health outcomes. In one study, early sexual debut was related to sexually transmitted infections in females but not males, and females and males experienced depressive symptoms related to early sexual debut differently (Kugler et al., 2017). Gilbert et al. found that among those who endorsed inequitable norms about gender and violence, girls but not boys experienced increased odds of intimate partner violence (IPV) victimization (Gilbert et al., 2020). Understanding the role of gendered risk factors – those that disproportionately affect AGYW and are associated with disparate health outcomes – can shed light on social determinants of gender inequities and provide important insights in promoting health equity.

Because gendered risk factors such as child marriage, early sexual debut, early pregnancy, and others can cluster together (Yakubu & Salisu, 2018), a person-centered approach that focuses on the clustering of experiences can identify sub-groups of individuals and elucidate

patterns of co-occurring factors among persons. Latent class analysis (LCA), an analytic approach that describes the underlying heterogeneity of a population – based on responses to multiple factors (McCutcheon, 1987) – has been used to understand these complex unobservable relationships. The use of LCA in the social and behavioral sciences led to important advances in understanding of how certain conditions, traits, or experiences may co-occur and present as patterns within a population. LCA applications have also improved understandings about variation in patterns of substance use, taking into consideration the prevalence of multiple substances use (Shin et al., 2010), offering novel approaches to prevention and treatment (Lanza & Rhoades, 2013). The use of LCA in violence research has led to understandings about peer victimization (Nylund et al., 2007), and classes of types of violence against women (Cavanaugh et al., 2012). A person-centered, holistic approach to explore the cluster of gendered risk factors (i.e., teen pregnancy, child marriage, intergenerational sex, early sexual debut, HIV positive status, transactional sex, and attitudes about gender norms and violence) could lead to a more complete understanding of how AGYW experience combinations of these risk factors and may better inform targeted prevention programming.

The objective of this study was to identify groupings of AGYW in Lesotho based on patterns of gendered risk factors, and to assess the association between the identified groupings and two individual characteristics of interest: IPV and low educational attainment. IPV in sub-Saharan Africa is common and is a large contributor to a range of negative health outcomes such as physical injuries, mental health problems and emotional distress, unwanted or unintended pregnancy, increased risk of contracting HIV, and maternal death (WHO, 2005). Similarly, in Lesotho sexual violence is common, and intimate partners are the most common perpetrator (Brown et al., 2006; Ministry of Social Development of Lesotho et al., 2020). While Lesotho has made great efforts to increase educational attainment by signing into law Free and Compulsory Primary Education in 2010, the country still struggles with poor retention rates at the primary and secondary levels (Ministry of Education and Training of Government of Lesotho, 2016). To the best of our knowledge, no prior study has characterized the variations in patterns of these gendered risk factors and how the patterns relate to various health outcomes. While LCA has been used in other fields to classify subgroups and their association with various health outcomes, using LCA as a methodological approach to examine gendered risk factors and how they relate to violence is a novel approach. Understanding how patterns of gendered risk occurs in AGWY can support Lesotho to better tailor interventions to prevent and respond to gendered risk among AGYW, potentially resulting in the mitigation of a range of associated negative health and social outcomes such as intimate partner violence and low educational attainment.

2. Methods

2.1. Study design and participants

The Violence Against Children and Youth Surveys (VACS) are nationally representative household surveys that measure the prevalence of sexual, physical, and emotional violence against children and youth aged 13–24 years and collect information on risk factors, protective factors, and health conditions related to experiences of violence (Nguyen et al.,

2019). The 2018 Lesotho VACS was conducted by the Ministry of Social Development (MoSD), Ministry of Health, and ICAP at Columbia University in collaboration with United Nations Children's Emergency Fund (UNICEF) Lesotho, and the United States Centers for Disease Control and Prevention (CDC).

The Lesotho VACS protocol was independently reviewed and approved by the Research and Ethics Committee at the Lesotho Ministry of Health, the Columbia University Medical Center Institutional Review Board, and the CDC Institutional Review Board. Informed consent was obtained from all 18–24-year-old participants and emancipated minors. Parents or guardians provided parental permission and participants provided assent for participants under age 18. Lesotho interview teams were trained to administer face-to-face interviews (CDC, 2017). Participants who reported certain experiences including some forms of violence, became upset during the interview, or asked for help were connected to referral services. The Lesotho VACS adhered to the WHO recommendations on ethical and safety considerations on research on violence against women (WHO, 2001).

Eligibility for participation in the Lesotho VACS included being a 13–24-year-old male or female, residing in a household, and having the ability to speak either of the survey languages (English and Sesotho). Individuals residing in institutions, such as in prisons or hospitals, or who had cognitive disabilities or severe hearing or speech impairment were not eligible.

2.2. Data collection

The VACS questionnaire was designed by a group of violence experts, drawing from validated survey tools and the literature, and adapted to the Lesotho context by a partner group led by MoSD (available at https://www.togetherforgirls.org/resources-bank/).

The Lesotho VACS methodology included a split sample approach where female and male enumeration areas (EAs) were sampled separately. This approach protected the safety of the participants by mitigating the risk that, for example, a female victim and male perpetrator of violence from the same community would both be interviewed, and allowed for the calculation of representative estimates for males and females. Only females were included in this analysis.

The sampling frame was compiled by the Lesotho Bureau of Statistics from the 2016 national census. An EA in the rural areas was defined as a village or a group of villages with a well-defined boundary, and in the urban areas an EA was defined as comprising of a well-defined block of dwelling units with well-defined boundaries. To obtain a nationally representative sample, a three-stage clustered sampling design was used. In the first stage, 197 female EAs were selected using probability proportional to size sampling approach. In the second stage, 7414 eligible female households were selected by equal probability systematic sampling. In the third stage, one female was randomly selected among the eligible females in each of the selected households, totaling 7221 selected females. Of those, 7101 females completed interviews, yielding an overall female response rate of 96.2 %.

2.3. Definitions

The gendered risk factors in the latent class analysis included: teen pregnancy, child marriage, intergenerational sex, early sexual debut, self-reported HIV positive, transactional sex, endorsement of one or more negative traditional gender norms, and endorsement of one or more norms supportive of violence against women (VAW norms). Individual characteristics of interest included lifetime IPV victimization and IPV victimization by type (i.e., sexual, physical, and emotional) and low educational attainment (completed primary school or less). Definitions of gendered risk factors and the conditions of interest can be found in Table 1.

Unwanted sexual touching by an intimate partner was included in the calculation of the sexual IPV variable, though due to questionnaire structure unwanted sexual touching IPV could only be assessed for the first and most recent experiences of unwanted sexual touching. Attempted sex, pressured sex, and forced sex IPV included lifetime experiences.

Covariates included age (14–17 years old or 18–24 years old), orphanhood (defined as single or double orphan), and sexual, physical, or emotional non-intimate partner (non-IP) violence. Non-IP violence was assessed using the same violence questions in Table 1 but asked in reference to anyone other than an intimate partner.

Missing data, including don't know/declined responses, were rare with most individual items having <1 % missingness. Data were missing for 2.6 % of the responses used to calculate intergenerational sex, 7.0 % for the HIV positive variable, and 7.6 % for orphanhood. Missing data were not imputed; pairwise deletion was used to handle missing data.

2.4. Statistical analysis

Descriptive analyses among ever-partnered 14–24-year-old Lesotho AGYW (n = 4474, 63 % of the total sample) calculated prevalence of demographic factors, gendered risk factors, low educational attainment, and IPV. Inclusion in the analysis was limited to participants aged 14 years and older because 13 years is the youngest age of secondary school entrance in Lesotho. LCA was used to identify latent classes of gendered risk factors among ever-partnered Lesotho AGYW. A series of latent class models were fit successively, increasing the number of classes until there was no further significant improvement to the model fit. Model solutions were determined by evaluating Bayesian Information Criterion and Sample Adjusted Bayesian Information Criterion as a measure of relative goodness of fit where the lower values indicate a better model fit. Vuong-Lo-Mendell Rubin Likelihood Ratio Test (VLMR-LRT) as a measure of goodness of fit was also used where a non-significant p-value indicates the model with k-1 classes is preferable, and entropy as a measure of precision of assigning latent class membership where entropy values closest to 1 are preferable. To determine the class solution, model fit indices were evaluated, and the theoretical interpretability and utility of the model were considered. Average latent class posterior probabilities were calculated and represent the average probability of the class model predicting a person's class membership, with higher values (closer to 1) being optimal. LCA was performed using Mplus, Version 8.6 (Muthén & Muthén, 2017).

Multivariable logistic regressions assessed associations between latent classes and low educational attainment and IPV victimization. Adjusted models controlled for age, orphanhood, non-IP sexual violence, non-IP physical violence, and non-IP emotional violence. Non-IP sexual violence was not included in the IPV and sexual IPV models due to a high level of correlation, as assessed through Pearson correlation coefficients. Unweighted n's, weighted percentages, 95 % confidence intervals (CI), odds ratios (OR), adjusted odds ratios (aOR), and *p*-values were calculated using SAS 9.4 (SAS Institute Inc., Cary, North Carolina, USA). All calculations using Mplus and SAS accounted for the complex survey design and sample weights.

3. Results

Most ever-partnered AGYW in Lesotho were 18–24 years old (78.2 %) and 21.8 % were 14–17 years old (Table 2). About one in five ever-partnered AGYW had low educational attainment (20.4 %). Nearly half (44.7 %) experienced orphanhood (loss of one or both parents) before age 18. More than one in ten ever-partnered AGYW (12.0 %) experienced child marriage. Few (5.7 %) had early sexual debut, 38.8 % had ever been pregnant, and 26.0 % had experienced teen pregnancy. Almost a third (29.4 %) of ever-partnered AGYW endorsed one or more negative traditional gender norms and 26.7 % endorsed one or more VAW norms. <10 % had intergenerational sex (6.9 %), transactional sex (3.9 %), or were HIV positive (6.9 %). More than a third (37.6 %) of ever-partnered AGYW had experienced intimate partner violence, 17.8 % experienced sexual IPV, 14.2 % experienced physical IPV, and 22.7 % experienced emotional IPV.

A three-class solution from the LCA was selected through evaluation of fit indices, average posterior probabilities, and class interpretation and utility. Model fit indices were calculated for the one-class model through the six-class model (Table 3). The Bayesian information criterion and sample-size adjusted Bayesian information criterion decreased with each additional class and did not decrease substantially beyond the three-class model, as indicated in the elbow-plot in Fig. 1. The VLMR-LRT *p*-value was not significant for the four-class model ($p = .1515$), indicating a better fit of the data to the three-class solution. Additionally, entropy was the highest for the three-class model (0.819) indicating appropriate assignment of latent class membership. Average latent class posterior probabilities were 0.95 for class 1, labelled "Low Risk class", 0.77 for class 2, labelled as "Attitudinal Risk class" and 0.90 for class 3, labelled as "Behavioral Risk class" (Table 4). The prevalence of class membership of 14–24-year-old ever-partnered AGYW in Lesotho was 72.8 % in the Low Risk class, 9.6 % in the Attitudinal Risk class, and 17.6 % in the Behavioral Risk class. In the Low Risk, probability of each risk factor was the lowest compared to class 2 and 3 (Fig. 2). In the Attitudinal Risk class, the probability of endorsement of one or more negative traditional gender norms was 100.0 % and one or more VAW norms was 100.0 %. In the Behavioral Risk, probability of teen pregnancy, child marriage, intergenerational sex, early sexual debut, being HIV positive, and transactional sex were the greatest, compared to classes 1 and 2.

Ever-partnered AGYW were older in the Behavioral Risk class (85.3 % [95 % CI 82.5–88.1] were 18–24) compared to the Attitudinal and Low Risk classes. Orphanhood was more common in the Behavioral Risk class (49.9 % [45.4–54.4]) compared to the Low Risk class,

and ever-partnered AGYW in the Behavioral Risk class had more frequently ever been married (91.7 % [88.9–94.5]) or were ever pregnant [95.3 % (93.6–97.0)] than compared to the Low Risk or Attitudinal Risk classes. For all individual characteristics of interest, except for sexual IPV, prevalence was greater in the Behavioral Risk class than the Attitudinal Risk class, and for all characteristics of interest prevalence was greater in the Behavioral Risk class and Attitudinal Risk class than the Low Risk class (Table 5). Prevalence of low educational attainment in the Low Risk class was 12.7 % (10.6–14.8), 32.1 % (26.6–37.6) in the Attitudinal Risk class, and 50.1 % (44.7–55.5) in the Behavioral Risk class. The percentage of ever-partnered AGYW who experienced IPV ranged from 32.6 % (30.1–35.2) in the Low Risk class to 47.5 % (42.2–52.8) in the Attitudinal Risk class and 54.9 (50.3–59.5) in the Behavioral Risk class. Sexual IPV was higher in the Attitudinal Risk class 22.2 % (18.0–26.4) and Behavioral Risk class 21.4 % (17.6–25.3) compared to the Low Risk class 16.4 % (14.5–18.3) but were not significantly different from each other. Prevalence of physical IPV in the Low Risk class was 10.1 % (8.8–11.5), 21.1 % (17.0–25.2) in the Attitudinal Risk class, and 29.7 % (25.0–34.4) in the Behavioral Risk class. Prevalence of emotional IPV in the Low Risk class was 19.1 % (17.0–21.1), 29.0 % (23.8–34.2) in the Attitudinal Risk class, and 35.9 % (31.4–40.3) in the Behavioral Risk class.

After controlling for covariates, the odds of lower educational attainment (adjusted odds ratio (aOR) = 3.26 [95 % CI 2.45–4.34]), IPV (1.77 [1.36–2.31]), physical IPV (2.40 [1.79–3.22]), and emotional IPV (1.63 [1.20–2.22]) were higher in the Attitudinal Risk class than the Low Risk class (Table 6). Similarly, the odds of lower educational attainment (aOR = 7.16 [95 % CI 5.63–9.11]), IPV (2.45 [1.98–3.04]), physical IPV (3.81 [2.95–4.92]), and emotional IPV (2.38 [1.87–3.02]), were higher in the Behavioral Risk class than the Low Risk class. The odds of low educational attainment (aOR = 2.19 [95 % CI 1.63–2.96]), IPV (1.38 [1.05–1.83]), physical IPV (1.59 [1.16–2.17]), and emotional IPV (1.46 [1.07–1.99]) were higher in the Behavioral Risk class than the Attitudinal Risk class. Odds of experiencing sexual IPV did not differ significantly across classes.

4. Discussion

Among ever-partnered AGYW in a nationally representative sample of Lesotho youth aged 14–24, an LCA of eight gendered risk factors identified three latent classes: Low Risk, Attitudinal Risk, and Behavioral Risk. The majority (72.8 %) of ever-partnered AGYW were in the Low Risk class and had a low probability of experiencing any of the eight gendered risk factors, whereas 17.6 % were in the Behavioral Risk class, and the remaining 9.6 % were in the Attitudinal Risk class. Important to this finding is the distinct separation of the Attitudinal Risk class, where there is very high probability of endorsing negative traditional gender norms and relatively lower probability of engaging in gendered risk behaviors, from the Behavioral Risk class. Different patterns of associations of class membership with IPV and low educational attainment also emerged from the analyses.

In the Behavioral Risk class, the probability of teen pregnancy was almost 90 % and child marriage was almost 60 %. Both early pregnancy and child marriage are considered public health and social risks associated with negative health outcomes including mental health problems and IPV (Erulkar, 2013; Sezgin & Punamäki, 2020). Building the capacity

of health service providers to provide adolescent-friendly reproductive health services and expanding access to these services can help girls and young women reduce behavioral risks. Interventions through antenatal clinics can identify girls and young women and provide them with services such as reproductive health services, HIV testing services that includes IPV screening, first line support integrating the LIVES (Listen, Inquire, Validate, Enhance Safety, and Support) approach – a WHO initiative that trains providers to build skills and focus on improving attitudes towards survivors of gender based violence, HIV prevention support, pre-exposure prophylaxis, and post-exposure prophylaxis.

Low educational attainment was associated with Behavioral Risk class membership compared with both the Low Risk and Attitudinal Risk classes. This is consistent with findings from previous studies that teen pregnancy, early marriage, and HIV are associated with lower educational attainment (Erulkar, 2013; Ombati & Ombati, 2012). The present findings confirm that teen pregnancy, child marriage, and HIV risk behaviors cluster together and are associated with lower educational attainment. Education is a powerful tool for women's equality, particularly in developing countries. Initiatives to promote gender equity in education and address gendered factors such as child marriage, teen pregnancy, and HIV can support girls and young women in staying in school and achieving the associated economic benefits. Economic disparity related to gender inequality is an ongoing and complex driver of HIV. The DREAMS initiative (Saul et al., 2018) includes evidence-informed interventions that aim to address many of the gendered risk factors for HIV and violence, such as community mobilization and norms change, social asset building, and social protection. Interventions that address the social and structural drivers of gender inequities can promote improved educational, economic, and health outcomes for AGYW (Chzhen et al., 2021).

The association between the Behavioral Risk class and IPV reflect research using variable-centered approaches that found associations between individual gendered risk factors and IPV (Jewkes et al., 2010). This study complements those findings by identifying that the pattern of interrelationships among gendered risk factors is associated with IPV overall. Ever-partnered AGYW in the Attitudinal Risk class also had greater odds of experiencing IPV than the Low Risk group, with greater odds of experiencing IPV among the Behavioral Risk than the Attitudinal Risk class. This finding highlights the importance of strategies to reduce gendered risk factors as drivers of IPV. After adjusting for covariates, no association was found between any of the classes and sexual IPV, while ever-partnered AGYW in the Attitudinal and Behavioral Risk classes had greater odds of experiencing physical IPV and emotional IPV. This could reflect lower power in the sexual IPV analyses compared with emotional and physical IPV analyses. This finding could further suggest that associations between patterns of gendered risk factors and sexual IPV are accounted for by factors such as age and non-IP violence that were covariates in the models.

Distinct Attitudinal Risk and Behavioral Risk classes emerged and had different patterns of gendered risk and associations with IPV and low educational attainment. The Attitudinal Risk class had 100 % probability of endorsing both negative traditional gender norms and VAW norms. Gender norms and attitudes supportive of traditional gender role patterns are associated with violence victimization and infrequent condom use in the past 12 months

(Gilbert et al., 2020). Gender transformative interventions with boys and young men, girls and young women, their partners, their families, and their communities that promote equitable gender norms can be effective community and societal strategies to prevent violence and promote educational equity (Abramsky et al., 2014; Chzhen et al., 2021; De Brauw et al., 2015; Garcia & Saavedra, 2017). Ever-partnered AGYW in the Attitudinal Risk class had higher odds for both low education and IPV than those in the Low Risk class. Interventions directed towards recruiting AGYW who exhibit behaviors associated with risk (such as pregnancy, child marriage, and early sexual debut) may miss AGYW who have attitudinal risk factors and are also at elevated risk for poor educational attainment and IPV. Therefore, programming to help keep girls in school and lower risk of IPV could incorporate efforts to identify attitudinal risk factors as a marker for vulnerability among AGYW. Although the Behavioral and Attitudinal Risk classes have different gender risk profiles, they are both associated with lower educational attainment and IPV. Strategies that address gender norms and the structural drivers of gender inequities are a key component of efforts to prevent IPV and support educational equity for AGYW (Dunkle et al., 2020; Kerr-Wilson et al., 2020; Pronyk et al., 2006).

The findings from the current study are subject to some limitations. First, the VACS is a cross-sectional survey. Directionality of association between class membership and the conditions of interest cannot be established and there is temporal uncertainty in the relationships between the risk factors and IPV or low educational attainment. The results of this study may have limited generalizability to other countries or in other populations outside of this region. Replication of this analysis in other settings, both within and outside the region, would help to understand the validity of this three-class membership in other populations, and applying this analysis using other health outcomes would strengthen understanding of using these risk classes more broadly. In the VACS, youth are asked to recall sensitive experiences from their past. Because of recall bias and social desirability bias results may be underestimated, however interviewers were extensively trained to mitigate desirability bias and exclusion of participants over the age of 24 maximized ability to recall adolescent and childhood events. Finally, inherent to LCA, labeling of the classes may be subject to naming fallacy, as labeling is dependent on the researcher's subjective interpretation. However, the labels assigned to the three classes in this study seem to provide a good description of the characteristics of members.

The findings from this analysis indicate that gendered risk factors form distinct classes. Membership in the behavioral risk class and attitudinal risk class were associated with low educational attainment and IPV, with the magnitude of association being stronger among the behavior risk class. High probabilities for certain risk factors in the Behavioral Risk class, such as the probability of teen pregnancy in 89 % of AGYW, indicate potential target points for intervention, such as antenatal clinics. Notably, the LCA identified a distinct group of AGYW who had high probability of attitudinal risk factors and low probability of behavioral risk factors, yet this class (Attitudinal Risk class) was also associated with having lower education attainment and IPV, indicating that programs which aim to retain AGYW in school and prevent IPV and do not screen for attitudinal risk factors, may be missing this important group of AGYW. This research compliments variable centered research that found relationships between individual gendered risk factors and IPV and provides

additional context to these complex relationships. LCA can be an important approach to better understand the complicated relationship gendered risk factors have with each other and with certain outcomes, to further elucidate the influence that gender has on the health of AGYW.

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Disclaimer

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

Data availability

The VACS Lesotho dataset analyzed in the study are available to the public upon request. Requests should be submitted to Together for Girls (https://www.togetherforgirls.org/).

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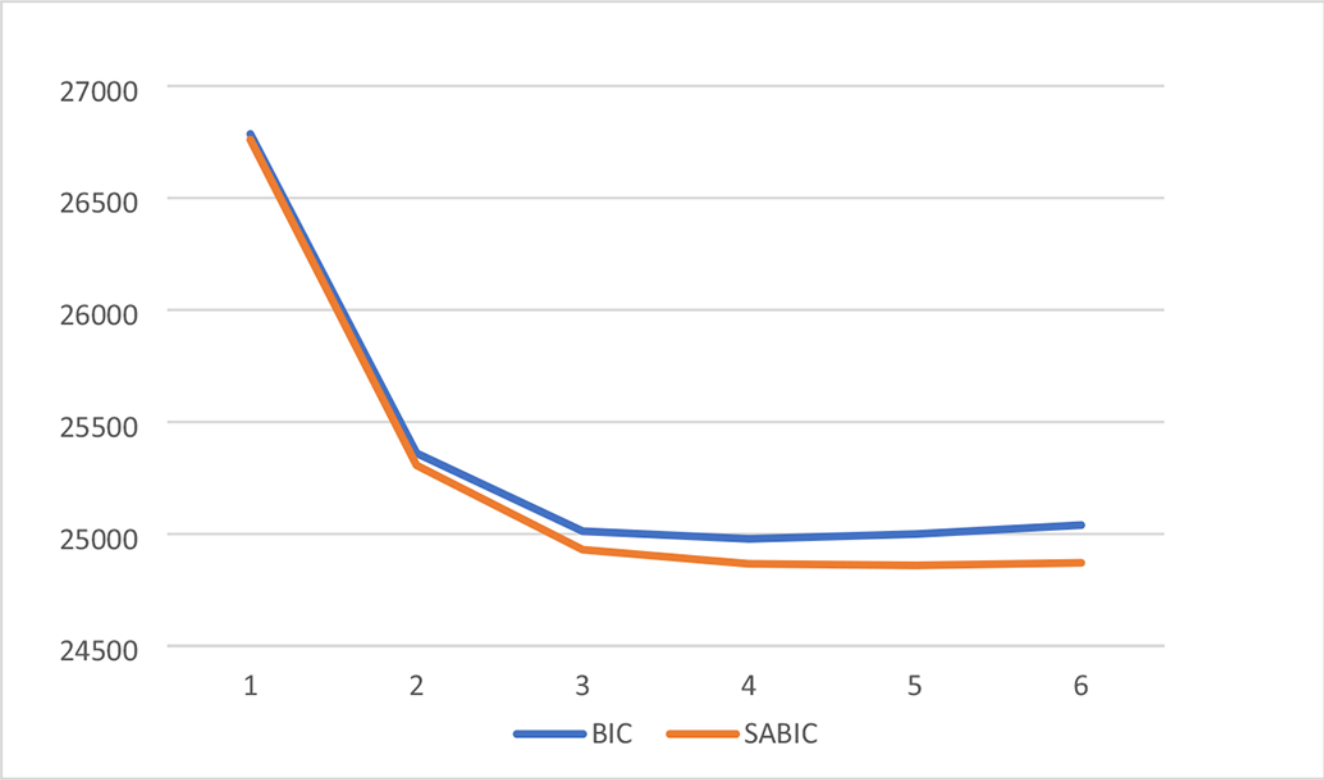

Fig. 1.
Plot of information criterion values: gendered risk factors—contribution subscale latent class analysis models.

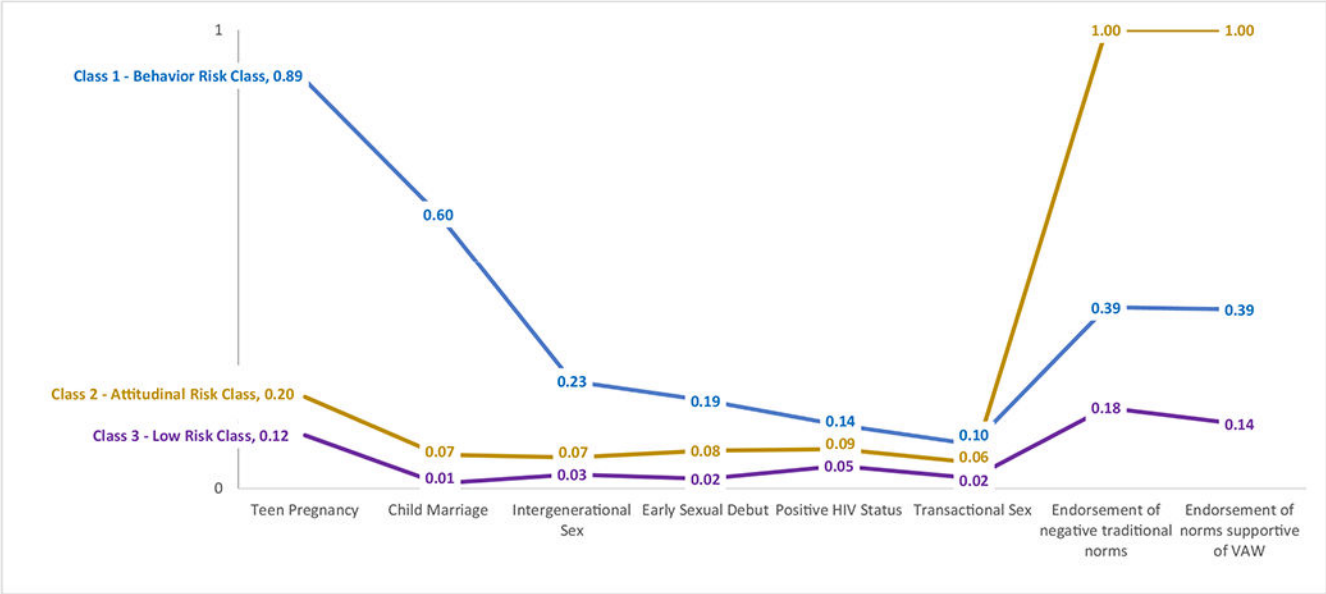

Fig. 2.
Probability of risk factor for each class.

Table 1

Definitions of gendered risk factors, intimate partner violence (IPV) victimization, and school attainment.

Measure	Definition
Teen pregnancy	Pregnancy before age 20
Child marriage	Married or lived with someone as if married before age 18
Intergenerational sex	Sex with a partner who was 10 or more years older
Early sexual debut	Sex before age 16
HIV positive	Self-reported HIV positive
Transactional sex	Had sex with a partner because they provided material support (e.g., helping to pay for things, gave gifts or things such as good, school fees, or money) or help in any other way
Endorsement of one or more negative traditional gender norms	Answered yes to one or more of the following items: Do you believe: (a) Only men, not women should decide when to have sex (b) If someone insults a boy or man, he should defend his reputation with force if he needs to (c) There are times when a woman should be beaten (d) Women who carry condoms have sex with a lot of men (e) A woman should tolerate violence to keep her family together
Endorsement of one or more norms supportive of violence against women	Answered yes to one or more of the following items: In your opinion, is a husband justified in hitting or beating his wife in the following situations: (a) If she goes out without telling him (b) If she neglects the children (c) If she argues with him (d) If she refuses to have sex with him (e) If she burns the food
IPV victimization	Included sexual, physical, and emotional violence perpetrated by an intimate partner.
Sexual IPV	Answered yes to one or more of the following items: Has a boyfriend/romantic partner, girlfriend/romantic partner, ex-boyfriend/romantic partner, ex-girlfriend/romantic partner, husband, wife, ex-husband or ex-wife ever: (a) Touched you in a sexual way without your permission, but did not try and force you to have sex? (b) Tried to make you have sex against your will but did not succeed? (c) Physically forced you to have sex and did succeed? (d) Pressured you in a non-physical way to have sex against your will and did succeed?
Physical IPV	Has a boyfriend/romantic partner, girlfriend/romantic partner, ex-boyfriend/romantic partner, ex-girlfriend/romantic partner or husband/wife ever: (a) Slapped, pushed, shoved, shook, pulled hair, twisted arm, pinched, or intentionally threw something at you to hurt you? (b) Punched, kicked, whipped, or beat you with an object? (c) Choked, smothered, tried to drown you, or burned you intentionally? (d) Used or threatened you with a stick, knife, gun or other weapon?
Emotional IPV	Answered yes to one or more of the following items: (a) Has a boyfriend/romantic partner, girlfriend/romantic partner, ex-boyfriend/romantic partner, ex-girlfriend/romantic partner, husband or ex-husband, or wife or ex-wife ever done any of these things to (a) Insulted, humiliated, or made fun of you in front of others? (b) Kept you from having your own money? (c) Tried to keep you from seeing or talking to your family or friends? (d) Kept track of you by demanding to know where you were and what you were doing? (e) Made threats to physically harm you?
Low educational attainment	Completed primary school or less

Table 2

Demographics and individual characteristics of 14–24 year old ever-partnered adolescent girls and young women in Lesotho.

	n	% (95 % CI)
Age		
14–17	4474	21.8 (20.4–23.1)
18–24		78.2 (76.9–79.6)
Low educational attainment	4461	20.4 (17.7–23.1)
Orphan before age 18	4121	44.7 (42.6–46.8)
Ever married	4471	35.9 (33.0–38.9)
Married or lived with someone before age 18 (child marriage)	4467	12.0 (10.3–13.7)
Sex at or before age 15 (early sexual debut)	4448	5.7 (4.8–6.6)
Ever pregnant	4471	38.8 (36.3–41.2)
Pregnancy before age 20 (teen pregnancy)	4469	26.0 (23.9–28.1)
Endorsement of one or more negative traditional gender norms	4474	29.4 (27.3–31.5)
Endorsement of one or more norms supportive of violence against women	4473	26.7 (24.3–29.1)
Intergenerational sex	4469	6.9 (6.1–7.8)
Transactional sex	4469	3.9 (3.1–4.7)
Positive HIV status	4158	6.9 (5.8–8.1)
Non-intimate partner sexual violence	4474	9.5 (8.0–11.1)
Non-intimate partner physical violence	4474	29.4 (27.0–31.9)
Non-intimate partner emotional violence	4472	9.3 (8.0–10.5)
IPV	4474	37.6 (35.4–39.8)
Sexual IPV	4456	17.8 (16.1–19.5)
Physical IPV	4473	14.2 (12.7–15.8)
Emotional IPV	4474	22.7 (20.7–24.6)

CI=Confidence interval; IPV = intimate partner violence.

Table 3

Latent class analysis: model fit indices.

Fit index	Number of classes					
	1	2	3	4	5	6
BIC	26,785.41	25,360.45	**25,012.37**	24,977.96	24,999.53	25,039.55
SABIC	26,759.99	25,306.43	**24,929.75**	24,866.75	24,859.71	24,871.14
VLMR-LRT p-value	n/a	0	**0**	0.1515	0.331	0.759
Entropy	n/a	0.724	**0.819**	0.622	0.657	0.634

BIC = Bayesian Information Criterion; SABIC = Sample-size adjusted BIC; VLMR-LRT = Vuong-Lo-Mendell-Rubin adjusted likelihood ratio test. Note. Bold values indicate the selected class solution.

Table 4

Classification probabilities: Gendered risk factors contributions 3-class model.

	Low risk class	Attitudinal risk class	Behavioral risk class
Low risk class	**0.950**	0.000	0.050
Attitudinal risk class	0.152	**0.770**	0.078
Behavioral risk class	0.071	0.026	**0.903**

Note. Values indicate probabilities of most likely class membership (column) by latent class model assignment (row). Bolded values indicate average posterior probabilities (AvePP).

Table 5

Distribution of demographics and individual characteristics by gendered risk factor latent class membership, among 14–24 year old ever-partnered adolescent girls and young women in Lesotho.

	Low risk class *n* = 3301 % (95 % CI)	Attitudinal risk class *n* = 536 % (95 % CI)	Behavioral risk class *n* = 637 % (95 % CI)
Age			
14–17	22.0 (20.3–23.8)	28.4 (24.3–32.6)[a]	14.7 (11.9–17.5)[b,c]
18–24	78.0 (76.2–79.7)	71.6 (67.4–75.7)[a]	85.3 (82.5–88.1)[b,c]
Orphan before age 18	43.1 (40.8–45.4)	48.2 (42.4–54.1)	49.9 (45.4–54.4)[b]
Ever married	25.5 (23.0–28.0)	33.5 (27.6–39.5)[a]	91.7 (88.9–94.5)[b,c]
Ever pregnant	40.2 (37.3–43.2)	46.2 (40.5–51.8)	95.3 (93.6–97.0)[b,c]
Low educational attainment	12.7 (10.6–14.8)	32.1 (26.6–37.6)[a]	50.1 (44.7–55.5)[b,c]
IPV	32.6 (30.1–35.2)	47.5 (42.2–52.8)[a]	54.9 (50.3–59.5)[b,c]
Sexual IPV	16.4 (14.5–18.3)	22.2 (18.0–26.4)[a]	21.4 (17.6–25.3)[b]
Physical IPV	10.1 (8.8–11.5)	21.1 (17.0–25.2)[a]	29.7 (25.0–34.4)[b,c]
Emotional IPV	19.1 (17.0–21.1)	29.0 (23.8–34.2)[a]	35.9 (31.4–40.3)[b,c]

CI=Confidence interval; IPV = intimate partner violence.

[a] x^2 test of significant *p*-value is <0.05: comparing attitudinal risk class vs. low risk class.

[b] x^2 test of significant *p*-value is <0.05: comparing behavioral risk class vs. low risk class.

[c] x^2 test of significant p-value is <0.05: comparing behavioral risk class vs. attitudinal risk class.

Table 6

Three class latent regression model: Odds of class membership given covariates, among 14–24 year old ever-partnered adolescent girls and young women in Lesotho.

	Attitudinal risk class (vs. Low risk class)		Behavioral risk class (vs. Low risk class)		Behavioral risk class vs. Attitudinal risk class	
	Unadjusted OR (95 % CI)	Adjusted OR[a] (95 % CI)	Unadjusted OR (95 % CI)	Adjusted OR[a] (95 % CI)	Unadjusted OR (95 % CI)	Adjusted OR[a] (95 % CI)
Low educational attainment	**3.25 (2.46–4.28)** ***	**3.26 (2.45–4.34)** ***	**6.90 (5.47–8.70)** ***	**7.16 (5.63–9.11)** ***	**2.13 (1.59–2.84)** ***	**2.19 (1.63–2.96)** ***
IPV	**1.87 (1.46–2.39)** ***	**1.77 (1.36–2.31)** ***	**2.52 (2.05–3.10)** ***	**2.45 (1.98–3.04)** ***	**1.35 (1.03–1.78)** *	**1.38 (1.05–1.83)** *
Sexual IPV	**1.45 (1.10–1.92)** **	1.33 (0.97–1.82)	**1.39 (1.10–1.77)** **	1.22 (0.95–1.57)	0.96 (0.69–1.34)	0.92 (0.64–1.32)
Physical IPV	**2.37 (1.81–3.12)** ***	**2.40 (1.79–3.22)** ***	**3.75 (2.93–4.80)** ***	**3.81 (2.95–4.92)** ***	**1.58 (1.18–2.12)** **	**1.59 (1.16–2.17)** **
Emotional IPV	**1.74 (1.32–2.28)** ***	**1.63 (1.20–2.22)** **	**2.37 (1.89–2.98)** ***	**2.38 (1.87–3.02)** ***	**1.37 (1.01–1.86)** *	**1.46 (1.07–1.99)** **

OR = Odds ratio; CI=Confidence interval; IPV = intimate partner violence.

Note. Bold values indicate significat *p*-value.

* $p \leq .05$.

** $p \leq .01$.

*** $p \leq .001$.

[a]Models adjusted for age, orphanhood, non-intimate partner sexual violence (not included in IPV and sexual violence IPV models due to correlation), non-intimate partner physical violence, non-intimate partner emotional violence.