Effect of education on attitude towards domestic violence in Nigeria: an exploration using Propensity score methodology

Olanrewaju Davies Eniade (eniadetreasure@gmail.com)
University of Ibadan

Joshua Odunayo Akinyemi
University of Ibadan

Oyindamola Bidemi Yusuf
University of Ibadan

Rotimi F. Afolabi
University of Ibadan

Olufunmilayo I. Fawole
University of Ibadan

Research Article

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Posted Date: February 10th, 2021

DOI: https://doi.org/10.21203/rs.3.rs-211196/v1

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Effect of education on attitude towards domestic violence in Nigeria: an exploration using Propensity score methodology

Olanrewaju Davies Eniade
eniadetreasure@gmail.com
https://orcid.org/0000-0001-7142-3818

Joshua Odunayo Akinyemi
joakinyemi@com.ui.edu.ng
orcid:org/0000-0002-0675-2110

Oyindamola Bidemi Yusuf
bidemiyusuf1@gmail.com

Rotimi F. Afolabi
rotimifelix@yahoo.com
https://orcid.org/0000-0002-0744-1787

Olufunmilayo I. Fawole
fawoleo@ymail.com
Abstract

**Background:** Experimental studies remain the gold standard in making causal inference. However, using experimental studies to estimate the effect of education on attitude towards domestic violence (ATDV) is not feasible due to ethical issues. Propensity Score Methodology (PSM) can be used to overcome this challenge. PSM is a statistical technique used in observational studies to estimate the effect of interventions by accounting for covariates that predicts the treatment. Therefore, PSM was used to investigate the effect of education on ATDV among men and women in Nigeria.

**Methods:** A total of 14,495 and 33,419 records were extracted for men and women respectively from the 2016-2017 Multiple Indicator Cluster Survey (MICS) in Nigeria. The outcome variable was ATDV. The treatment variable was education while the covariates were age, residence, geopolitical zones, marital status, ethnicity, parity, wealth index, alcohol use and media exposure.
(use of television or radio). For the PSM analyses, selection bias was checked among the levels of education using the multinomial logit regression. Propensity scores (PS) and PS weights were generated for the treatment variable and average treatment effects (ATE) of ATDV were estimated using logistic regression that combined regression adjustment and inverse-probability weighting. Descriptive statistics, odds ratios and 95%CI were presented.

**Results:** The mean age of men and women were 30.8±10.2 years and 29±9.4 years respectively. About 16% men 14% women had tertiary education. The proportion of men and women who justified domestic violence (DV) was 22% and 34.5% respectively. Results from the multinomial logit model showed the existence of selection bias between the covariates and level of education (p<0.05). The selection bias was effectively corrected (SD diff ≈ 0, Variance ratio ≈ 1) after estimation of PS. Results from the PSM showed that the odds of ATDV decreased as level of education increased. Men (AOR = 0.84, 95% CI: 0.78, 0.92) and women (AOR=0.94, 95%CI: 0.80, 2.22) who attained tertiary education were less likely to justify DV in comparison to their uneducated counterparts.

**Conclusion:** Education played a crucial role in ATDV among men and women in Nigeria. Tertiary education was protective for ATDV among men and women. The use of PSM effectively controlled for selection bias in estimating the effect of education on ATDV. PSM will enable researchers make causal inference from non-experimental/ cross-sectional studies in situations where randomized control trials are not feasible.

**Keywords:** Propensity score, attitude towards domestic violence, treatment effect, selection bias.

**Background**
Experimental studies remain the gold standard when measurement of causal relationship is of interest. Scholars solely rely on Randomized Control Trials (RCT) to make causal inference in various fields of research. However, randomization, manipulation and intervention are impossible in some research especially in evaluating the effect of programs (Oliver et al., 2002). For instance, it will be unethical for a researcher to deny some set of people access to education program because of research. Similarly, it will be unacceptable for a researcher to expose some women to violence and watch if their access to maternal health care will be poorer than those who were not exposed to violence (Kean et al., 1991; Sayar et al., 2019). However, analysis of observational data is an option, but the generalizability and the reliability of such findings are questionable especially in studies where causal factor is of interest. The major problem of non-experimental study is “selection bias” which is known as the systematic difference between the treatment (exposed) and control (non-exposed) group based on any number of covariates (Rosenbaum & Rubin, 1984). This systematic difference (selection bias) was corroborated by Shadish in a study where study participants who self-selected themselves into training group performed better than those who were randomly assigned to the same training group (Shadish et al., 2006). Findings from Shadish study confirmed the claim of Rosenbaum and Rubin that participants who were not randomly assigned to treatment will tend to give better report on the treatment or the exposure.

All efforts to adjust and correct for selection bias such as structural equation modeling (SEM), adjusted regression and Randomized Control Trials (RCT) showed no improvement (Cepeda et al., 2003). Only the use of PSM can effectively control for the selection bias (Arikan et al., 2018). Many studies have used PSM to address the problem of selection bias in quasi-experimental and cross-sectional study designs (Feng et al., 2012; Rubin, 1997; Shadish et al.,
2006; Yang et al., 2016; Yaya et al., 2019). PSM is a statistical method that has proven useful for evaluating treatment effect when using non-experimental or observational data (Guo & Fraser, 2015). PSM is used when researchers need to assess the effect of covariates on the outcome variable using survey data, census, administration data, and other observational data without any intervention by random assignment rules (Rubin, 1997).

The Nigerian Demographic and Health Survey (NDHS) report showed that 35 percent of women and 25 percent of men justified DV in Nigeria (DHS, 2013). ATDV has been identified as an indicator of the degree of social acceptance of DV and a known predictor of victimization and perpetration of DV. People’s ATDV determines whether such violent acts will be reported or not (National Bureau of Statistics & UNICEF, 2017; Okenwa-Emegwa et al., 2016). A preponderance of educated men and women who justified DV was reported for reasons like; wife burns the food, argues with him, goes out without telling him, neglects the children, or refuses sexual intercourse with him (Okenwa-Emegwa et al., 2016). The magnitude, extent, and predictors of ATDV against women have been examined among men and women (Fawole et al., 2005; Okenwa-Emegwa et al., 2016). Factors such as Islamic religion, residency in the northern region, the South-South region, low levels of education and low household wealth have been reported to influence justification of DV. Of the reported associated factors of IPV and ATDV, studies have implicated education but majority of the evidence have been based on observational studies which has limitations when it comes to “causal inference”. It is on this premise that the present study is aimed to employing PSM to investigate the effect of education on ATDV.
Further, the use of PSM to estimate the effect of drug use on violent behaviors while adjusting for selection bias among students in Southwest, Nigeria showed that drug use was associated with the likelihood of violent behavior. (Yusuf et al., 2014). Also, IPV has been linked as a risk factor for maternal health care utilization and poor pregnancy outcome using PSM (Yaya et al., 2019).

Studies have shown that higher level of education were protective against the risks of DV among men and women (Bates et al., 2004; Koenig et al., 2003; Okenwa-Emegwa et al., 2016; Wang, 2016). Since ATDV is an indicator of the degree of social acceptance of DV and a known predictor of victimization and perpetration of DV (National Bureau of Statistics & UNICEF, 2017), it was important to investigate whether education will also be a protective factor for ATDV among the general population so as to be able to make policies that will protect current and potential victims of domestic violence and enhance a protective ATDV among the perpetrators.

The objective of this study was to examine the effect of education on ATDV among men and women in Nigeria using PSM. We hypothesized that PSM will improve the estimation of the effect of educational level on ATDV among men and women.

**Materials and methods**

**Study design and setting**

We used 2016-2017 Multiple Indicator Cluster Survey (MICS5), a cross sectional study carried out among adult (men and women) aged 15 to 49 years in Nigeria. Nigeria is the most populous African country with estimated population of about 206 million inhabitants consisting 99.1
million females (Thomas & Crow, 2020; Worldometer, 2020). Nigeria has 36 states and a Federal Capital Territory (political divisions). Nigeria has more than 50 ethnic groups among which Yoruba, Hausa/Fulani, and the Igbo are the dominants while Islam and Christianity are the predominant religions practiced.

Study population and sampling procedures

The study population included men and Women who are between the ages of 15 and 49. The survey used the sampling frame to determine the enumeration areas (EAs), local government areas (LGAs), states, and zones in Nigeria as prepared in the 2006 Population Census of the Federal Republic of Nigeria. Further details of the sampling procedures were provided in the MICS5 report (National Bureau of Statistics & UNICEF, 2017). For this analysis, records of men and women who responded to the questions on ATDV were sorted giving a total of 14,495 and 33,419 records of men and women respectively.

Study variables

DV was defined as “any use of physical, sexual, psychological or economic violence of one family member, irrespective of person’s age, gender or any other personal circumstance of the victim or the perpetrator of violence”. The outcome variable was ATDV categorized as “DV justified” and “DV not justified”. ATDV was measured by asking the respondents the following question. In your opinion, is a husband justified for hitting or beating his wife in the following situations:

[A] If she goes out without telling him? (YES/NO), [B] if she neglects the children? (YES/NO), [C] If she argues with him? (YES/NO), [D] If she refuses to have sex with him? (YES/NO), [E] If she burns the food? (YES/NO). Any respondent who said yes to any of the five questions above was said to have justified DV and whosoever said no to all the five questions does not justify DV. The
treatment variable was Educational level, while the covariates were age, religion, occupation type, residential type, geopolitical region, marital status, wealth index, ethnicity, number of children, age at first sex, alcohol use, tobacco use, and media use.

**Data analysis**

The demographic, socio-economic and lifestyle characteristics were described using frequency tables and percentages. Association between the treatment variable (educational level) and all the categorical variables were tested using the chi-square test. The PSM was thereafter used to estimate the effect of level of education on ATDV.

**Techniques used in propensity score methods**

The approach was in three stages. First, we checked for imbalance (selection bias) between the treatment variable and the covariates using multinomial regression. Each of the study covariate was used as the outcome variable in the model and the treatment variable (Educational level) as the explanatory variable in the model,

Multinomial equation

\[
\log \left( \frac{\pi_{ij}}{\pi_{iJ}} \right) = \alpha_j + \chi_i \beta_j
\]

Where \(\pi_{ij}\) is the probability of a response of the dependent that is greater or equal to a given category \((i=2\ldots4)\), \(\pi_{iJ}\) is the probability of the response less than the given category \((i=1)\), \(\alpha_j\) is a constant and \(\beta_j\) is a vector of regression coefficients, for \(j=1,2,\ldots,J-1\). \(X_i\) is a vector of the covariates. At the second stage, we estimated generalized PS expressed as \(e(x_{k,d}) = pr(D = d | X = x)\) which is the generalized PS of receiving treatment dose \(d\) for participants \(k\).
with observed covariate $X$. The inverse of the PSW were obtained for participants. The inverse PSW is expressed as $\frac{1}{e^{(X_k,d)}}$.

Stage three was achieved by using the “tebalance summary” on “stata MP 14” to check if the standardized difference of the weighted scores are close to zero and the variance ratio for the weighted scores are close to one for all the covariates (SD diff $\approx 0$, Variance ratio $\approx 1$). If the result obtained satisfied the above criterion (i.e. SD diff $\approx 0$, Variance ratio $\approx 1$), then selection bias has been corrected (i.e. covariates are balanced) otherwise the selection bias has not been corrected. Lastly, we used the “teffect ipw” command on stata MP 14 to estimate the effect of the treatment (level of education). The “teffect ipw” command conducted a logistic regression that combined regression adjustment and inverse-probability weights between the study outcome variable ATDV and the propensity weight of the treatment variable. This provided the average treatment effect (ATE) which measures the effect of the PSW of educational level on ATDV. Also, the potential outcome means (PO mean) which measures the effect of education on ATDV without the use of PS. Data were weighted to reflect educational level differentials in the population of men and women. Descriptive statistics, odds ratios and 95%CI were presented. All analyses were conducted at 5% level of significance using stata MP 14 (StataCorp, 2015).

Results

Respondents profile

Information about the socio-economic, demographic characteristics of women were presented in Table 1 and 2. Men had a mean age of 29 years (SD=10 years). Of the 14,495 men who participated in this study, 22% justified DV. About 10.7% had no education while 17.3% had tertiary education. Close to half (48.2%) of the respondents were married. More than half
(53.1%) of the respondents had no children, and about 32.7% used alcohol. Also, 97.3% do not smoke cigarette and most of them (56.6%) had media exposure. Also 32.6% were residents of urban areas and 13.4% were from South-west region. There was a preponderance of Hausa (38.8%) men in this study, 13.4% were Yorubas and majority (44.8%) of the respondents were rich.

Women had a mean age of 29 ± 9.4 years while 34.5% justified DV and 10.8% have attained tertiary education. There was a preponderance of married women (70.7%) in this study and 28.1% had no children while about 18.6% used alcohol. Almost all (99.6%) don’t engage in cigarette smoking. More than a half (59.8%) were exposed to media and 32.0% were urban dwellers.
Table 1: Demographic Characteristics of men and women

| Variables       | Men           |                  | Women          |                  |
|-----------------|---------------|------------------|----------------|------------------|
|                 | Frequency     | Percentage (%)   | Frequency      | Percentage (%)   |
| **Age**         |               |                  |                |                  |
| 15-19           | 3283          | 22.6             | 6312           | 18.9             |
| 20-24           | 2257          | 15.6             | 5569           | 16.7             |
| 25-29           | 2070          | 14.3             | 5835           | 17.5             |
| 30-34           | 2018          | 13.9             | 5211           | 15.6             |
| 35-39           | 1883          | 13.0             | 4343           | 13.0             |
| 40-44           | 1684          | 11.6             | 3564           | 10.7             |
| 45-49           | 1300          | 9.0              | 2585           | 7.7              |
| **Age Mean(SD)**| 29.1(10.0)    |                  | 29(9.4)        |                  |
| **Education**   |               |                  |                |                  |
| None            | 1552          | 10.7             | 4687           | 14               |
| Primary         | 3443          | 23.8             | 12125          | 36.3             |
| Secondary       | 6995          | 48.3             | 13006          | 38.9             |
| Tertiary        | 2505          | 17.3             | 3601           | 10.8             |
| **Ethnicity**   |               |                  |                |                  |
| Hausa           | 5555          | 38.3             | 13093          | 39.2             |
| Igbo            | 1856          | 12.8             | 4715           | 14.1             |
| Yoruba          | 1886          | 13               | 4234           | 12.7             |
| Other ethnic    | 5198          | 35.9             | 11377          | 34               |
| **Geopolitical**|               |                  |                |                  |
| North central   | 2978          | 20.5             | 6767           | 20.2             |
| North east      | 2338          | 16.1             | 4942           | 14.8             |
| North west      | 3753          | 25.9             | 9124           | 27.3             |
| South east      | 1381          | 9.5              | 3595           | 10.8             |
| South-South     | 2109          | 14.5             | 4642           | 13.9             |
| South west      | 1936          | 13.4             | 4349           | 13               |
| **Residence**   |               |                  |                |                  |
| Urban           | 4722          | 32.6             | 10703          | 32               |
| Rural           | 9773          | 67.4             | 22716          | 68               |
| **Marital status** |             |                  |                |                  |
| Married         | 6983          | 48.2             | 23569          | 70.7             |
| Divorced/Single | 225           | 1.6              | 8356           | 25.1             |
| Single          | 7279          | 50.2             | 1400           | 4.2              |
### Table 2: Respondents profile

| Variables | Men       | Women      |
|-----------|-----------|------------|
|           | Frequency | Percentage | Frequency | Percentage |
| **Parity**|           |            |           |            |
| None      | 7703      | 53.1       | 9395      | 28.1       |
| 1 – 2     | 2186      | 15.1       | 7327      | 21.9       |
| 3 – 4     | 2004      | 13.8       | 7376      | 22.1       |
| more than 4 | 2602  | 18         | 9321      | 27.9       |
| Total     | 14495     | 100        | 33419     | 100        |
| **Wealth**|           |            |           |            |
| Poor      | 5138      | 35.4       | 12080     | 36.1       |
| Average   | 2858      | 19.7       | 6612      | 19.8       |
| Rich      | 6499      | 44.8       | 14727     | 44.1       |
| Total     | 14495     | 100        | 33419     | 100        |
| **Alcohol**|          |            |           |            |
| Yes       | 4738      | 32.7       | 6229      | 18.6       |
| No        | 9757      | 67.3       | 27189     | 81.4       |
| Total     | 14495     | 100        | 33418     | 100        |
| **Tobacco use** | |            |           |            |
| Yes       | 398       | 2.7        | 119       | 0.4        |
| No        | 14097     | 97.3       | 33299     | 99.6       |
| Total     | 14495     | 100        | 33418     | 100        |
| **Media** |           |            |           |            |
| No        | 6294      | 43.4       | 19978     | 59.8       |
| Yes       | 8201      | 56.6       | 13441     | 40.2       |
| Total     | 14495     | 100        | 33419     | 100        |
Selection bias

Result from the multinomial logit model fitted to check for selection bias was presented in additional table 1 and 2 for male and female respectively. The result revealed the presence of selection bias in men and women’s data ($p < 0.05$).

Weighted propensity scores

Table 3 shows the standardized difference and variance ratio of the weighted PS for men and women. The results showed that the standardized difference for the weighted are all close to zero, and the variance ratio are all close to one. This implied that selection bias has been addressed by PSM. Also, the similarity in the trends for each level of education presented in figure 1 and 2 showed that there is a good overlap in the estimated PS for educational level among men.
Table 3: Weighted propensity scores for men

| Variable                  | Men                  |          | Women                  |          |
|---------------------------|----------------------|----------|------------------------|----------|
|                           | Primary SD | VR | Secondary SD | VR | Tertiary SD | VR | Primary SD | VR | Secondary SD | VR | Tertiary SD | VR |
| Residence                 | Rural                | 1.5     | 1.5                   | 1.5     | 1.1       | 1.1 | 1.1       | 1.1 |
| Marital status            | Divorced/widow       | 0.4     | 0.4                   | 0.3     | 0.12      | 1.1 | 0.03      | 1.0 | 0.06       | 1.0 |
|                           | Single               | 0.58    | 1.4                   | 0.63    | 1.4       | 0.59 | 1.4       | 0.06 | 1.6       | 0.1 | 2.1       | 0.1 |
| Wealth index              | Poor                 | 0.06    | 0.9                   | 0.03    | 0.1       | 1.3 | 1.1       | 0.16 | 1.3       | 0.18 | 1.3      | 0.21 |
|                           | Middle               | 0.07    | 0.9                   | 0.57    | 0.7       | 0.04 | 0.4       | -    | 1.1       | 0.04 | 1.0      | 0.08 |
|                           | Rich                 | 0.31    | 1.9                   | 0.27    | 1.8       | 0.41 | 2.2       | -    | 0.9       | -    | 0.9      | 0.09 |
| Parity                    | 1-2                  | -       | 0.5                   | -       | 0.4       | 0    | 0.9       | 0.03 | 1.0       | -    | 0.9 |
|                           | 3-4                  | -       | 0.6                   | -       | 0.5       | 0    | 1         | 0.01 | 1.0       | -    | 0.9 |
|                           | >4                   | 0.56    | 1.0                   | 0.62    | 0.9       | 0.66 | 0.9       | -    | 1.1       | 0.04 | 1.0      | 0.14 |
| Alcohol                   | No                   | 3.8     | 4.3                   | -0.1    | 2.7       | 0    | 0.9       | -    | 1.4       | -    | 1.5 |
| Smoke                     | No                   | -       | 0.7                   | -       | 0.7       | 0.13 | 1.3       | 0.09 | 1.2       | 0.1  | 1.2 |

SD = Standard difference, VR= Variance Ratio
Figure 1: Overlap plot for the propensity score of level of education (Men)

No Edu (blue line): This represents the uneducated
Pry Edu (pink line): Those who have attained primary level of education
Secondary Edu (Green line): Those who have attained secondary level of education
Tertiary Edu (Green line): Those who have attained tertiary level of education

Figure 2: Overlap plot for the propensity score of level of education (Women)
Treatment effect for attitude towards domestic violence among men

Result from the logistic regression that combined regression adjustment and inverse-probability weighting was presented for men and women in table 4. In comparison with uneducated men, those who have attained tertiary level of education (AOR = 0.84, 95% CI: 0.78, 0.92) were less likely to justify DV. Similarly, the Yorubas (AOR = 1.12, p =0.141, 95% CI: 0.96, 1.31) were more likely to justify DV relative to Hausa men. The same pattern was observed for men from the rich wealth quintile (AOR = 1.07, 95% CI: 0.99, 1.17) compared to poor men. Also, men who were exposed to media (AOR = 1.02, p =0.076, 95% CI: 1.00, 1.03) were more likely to justify DV in relative to their unexposed counterparts.

Women who have attained tertiary level of education (AOR = 0.94, p = 0.48, 95% CI: 0.80, 2.22) were less likely to justify DV compared to their uneducated counterpart. Similarly, Yoruba women (AOR = 1.12, p =0.214, 95% CI: 0.84, 1.17) were more likely to justify DV relative to Hausa women and rich women (AOR = 0.91, p =0.107, 95% CI: 0.81, 1.02) were less likely to justify DV compared to poor women.
Table 4: Treatment effect for attitude towards domestic violence among men and women

| Variables     | Men       | Women     |
|---------------|-----------|-----------|
|               | AOR 95% CI| AOR 95% CI|
| Education     |           |           |
| None          | ref       |           |
| Primary       | 0.94 0.87 1.03 1.03 | 0.88 2.41 |
| Secondary     | 0.92 0.85 1 1.04 | 0.88 2.42 |
| Tertiary      | 0.84 0.78 0.92 0.94 | 0.8 2.22 |
| Residence     |           |           |
| Urban         | ref       |           |
| Rural         | 1.05 1.03 1.07 1.04 | 1.02 1.06 |
| Ethnicity     |           |           |
| Hausa         | ref       |           |
| Igbo          | 1.04 0.9 1.2 1.07 | 0.96 1.18 |
| Yoruba        | 1.12 0.96 1.31 0.99 | 0.84 1.17 |
| Others        | 1.07 1 1.15 0.99 | 0.92 1.07 |
| Marital Status|           |           |
| Married       | ref       |           |
| Single        | 1.06 0.97 1.16 0.95 | 0.83 1.08 |
| Widowed/divorced | 1.02 0.95 1.09 0.99 | 0.94 1.03 |
| Parity        |           |           |
| None          | ref       |           |
| 1-2           | 1 0.96 1.05 1.04 | 1.02 1.07 |
| 3-4           | 1.12 0.97 1.28 1.06 | 1.02 1.1 |
| >4            | 1.03 0.94 1.13 1.05 | 1.01 1.09 |
| Media use     |           |           |
| Yes           | 1.02 1 1.03 1.02 | 1.01 1.04 |
| No            | ref       |           |
| Wealth index  |           |           |
| Poor          | ref       |           |
| Average       | 1.07 0.99 1.17 0.96 | 0.86 1.08 |
| Rich          | 1.06 0.97 1.16 0.91 | 0.81 1.02 |

AOR = Adjusted odds ratio for the treatment effects

Discussion

Effect of education on ATDV was assessed among men and women in Nigeria using a nationally representative data, where ATDV was the main outcome variable. Selection bias was detected in
the data which led to the use of PSM since it’s capable of minimizing selection bias in the data. PSM has been proved to be effective and it has been used in previous studies (Yang et al., 2016; Yaya et al., 2019; Yusuf et al., 2014). This study showed that lower proportion of men justified DV compared to women, although this rate was higher than that of Ukraine and Ghana, but almost in line with the percentage reported in Moldova and Namibia (Sardinha & Catalan, 2018). However, the disparity in the descriptive findings could be a result of the differences in the characteristics of the countries such as cultural beliefs and level of campaign against DV in the different countries. Arisi and Oromareghake reported that some cultures in Nigeria considered women as inferior beings, only useful in the kitchen, for pleasure and temptation (Arisi & Oromareghake, 2011). Also, it was known as common practice among men that women must kneel to beg their husbands when they are been beaten by their husband (Arisi & Oromareghake, 2011). Krause also corroborated the findings by further explaining that some cultures considered those acts of wife beating as a legitimate requital for a wife’s defiance rather than seen it as ‘violence’(Krause et al., 2016). Higher proportion of women justified DV in this study. This findings was similar to that of a report in Palestine and was buttressed that victims of DV were restrained from justifying DV to avoid marital separation as it could affect the children and their sustenance (Haj-Yahia, 2005).

Our results showed that only men who had primary education, secondary education and tertiary education were less likely to justify DV which was contrary to the previous finding where men who had primary and secondary education justified DV (Okenwa-Emegwa et al., 2016). This study and the previous study used a nationally representative data and the definitions of ATDV were similar, but the disparity could be as a result of the differences in the methods of analysis i.e the PSM that was used for this study has addressed the selection bias in the data thereby
providing a better estimate (Cepeda et al., 2003). This paper has its limitations, PSM is only capable of adjusting for selection bias, and other types of bias such as measurement bias may not be addressed by PSM. However, this limitation does not erode the strength of this study as it added to knowledge about statistical methodology and alternative to improve findings from non-experimental studies.

Conclusion

Education played a crucial role in ATDV among men and women in Nigeria. Tertiary education was protective for ATDV among men and women. The use of PSM effectively controlled for selection bias in estimating the effect of education on ATDV. PSM will enable researchers make causal inference from non-experimental/ cross-sectional studies in situations where randomized control trials are not feasible.

List of abbreviations

Attitude towards domestic violence (ATDV)
PSM: Propensity Score Methodology
MICS: Multiple Indicator Cluster Survey
PS: Propensity scores
ATE: Average treatment effects
DV: Domestic violence
RCT: Randomized Control Trials
SEM: Structural equation modeling
NDHS: Nigerian Demographic and Health Survey
EAs: Enumeration areas

PO mean: Potential outcome means

UNICEF: United Nations International Children's Emergency Fund

Consent for publication

Not applicable.

Competing interests

We do not have any competing interests.

Ethics approval and consent to participate

Secondary data was used for this study. Informed consent and ethical approval were obtained for the primary data collection by United Nations International Children's Emergency Fund (UNICEF). Every confidential information and personal identifier has been excluded from the dataset before it was made available for this study. As a result, the confidentiality and anonymity of the respondents are guaranteed. Also, permission to use the MICS 2016/2017 dataset was requested and granted by UNICEF.

Authors' contributions

Olanrewaju Davies Eniade: Conception of research idea, data extraction, data analysis, result writing and manuscript writing.

Joshua Odunayo Akinyemi: Research idea, data analysis, manuscript writing and manuscript review.
Oyindamola Bidemi Yusuf: Research idea, data analysis, manuscript writing and manuscript review.

Rotimi F. Afolabi: Data extraction, manuscript writing and manuscript review.

Olufunmilayo I. Fawole: Research idea, manuscript writing and manuscript review.

Acknowledgements
The authors would like to appreciate the UNICEF MICS team for making the dataset available for this study.

Availability of data and materials
The datasets used for this study was provided by MICS, permission to share the dataset was not granted but are available in their database on reasonable request.

Funding
There was no funding for this study.

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Figure 1

Overlap plot for the propensity score of level of education (Men)
Figure 2
Overlap plot for the propensity score of level of education (Women)

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