

Left Behind at the Margins: Gender and the Unequal Landscape of Reading Literacy in South Africa

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Article Info

Article Type

Original Research

Article History

Received:

10 October 2025

Accepted:

03 December 2025

Published online:

04 December 2025



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Abstract


Literacy is foundational for cognitive development, lifelong learning, and socio-economic participation. However, a notable gap remains in examining reading literacy within the general population. This study aims to identify the gendered factors influencing reading literacy in South Africa. A nationally representative sample of 10,297 individuals was analyzed using multivariate logistic regression in STATA. Results revealed notable gender disparities. Younger participants were more likely to be literate, with higher effects among males (OR = 2.87, 95% CI [1.66, 4.95]) than females (OR = 2.47, 95% CI [1.27, 4.79]). Education was the strongest predictor; females with secondary education showed the highest effect (OR = 190.79, 95% CI [124.61, 292.10]), while males with higher education demonstrated a similar impact (OR = 98.91, 95% CI [28.61, 341.99]). Media exposure, particularly radio listening and internet use, has a positive influence on literacy outcomes. Regional disparities persisted, with Limpopo, Mpumalanga, Eastern Cape, and North West exhibiting disproportionately low literacy levels. These findings underscore the need for targeted educational interventions tailored to high-illiteracy provinces, including adequate resources and funding for community-based reading centers and adult education programs, ensuring equitable access to quality education.

Keywords:

Educational attainment, gendered inequalities, internet usage, socioeconomic inequalities, South Africa.

Citation:

Mokoena, O. P., & Sesale, E. L. (2025). Left Behind at the Margins: Gender and the unequal landscape of reading literacy in South Africa. *International Journal of Current Education Studies (IJCES)*. Advance online publication. <https://doi.org/10.46328/ijces.216>

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Introduction

Literacy is foundational for cognitive development, lifelong learning, and socio-economic participation. In literature, literacy is defined in four domains: the ability to read, write, speak, and listen in a way that allows effective communication and understanding of the world (Gee, 2012; Roser & Ortiz-Ospina, 2018). In this study, literacy is operationally defined as the ability to read part or an entire sentence, as assessed through standardized survey instruments. Literacy transcends the traditional boundaries of reading and writing; it is a critical competency for navigating an increasingly digital, data-driven, and interconnected global society (Samanta, 2025). As education systems and labour markets undergo rapid digital transformation, individuals lacking foundational literacy and digital skills are systematically excluded from economic participation and civic engagement (Duma et al., 2021; Khatun, 2021; Olanrewaju et al., 2021; Reddy et al., 2023). This exclusion is not evenly distributed; it disproportionately affects populations in low and middle-income countries, particularly girls, refugees, and children with disabilities, who remain excluded by formal education systems (Crea et al., 2022; Makuyana, 2022; Mahlaule et al., 2024; Walton et al., 2024). Apart from academic achievement, literacy is foundational to cognitive and socio-emotional development, fostering critical thinking, communication, and collaboration skills essential for 21st-century citizenship and innovation (Maoulida et al., 2023; Thornhill-Miller et al., 2023).

Countries with persistently low literacy rates, such as those in Africa, including South Africa, often face compounding challenges of economic stagnation and high unemployment (Azevedo & Nnadozie, 2019; Khumalo, 2020). Moreover, several authors show that literacy is a determinant of health literacy, which reveals individuals' ability to access, interpret, and act on health information, which is an increasingly vital skill in the context of global health crises (Coughlin et al., 2020; Shahid et al., 2022; Mills, 2024). In this context, literacy is not merely an educational outcome but a strategic lever for equity, resilience, and sustainable development. Several other studies also highlight the persistent gender disparities in reading literacy, with females consistently outperforming males across diverse educational contexts (Fonseca et al., 2023; Mahmoud et al., 2022; Thomas et al., 2024). While this trend is well-documented in reading assessments, it contrasts sharply with gendered underperformance in Science, Technology, Engineering, and Mathematics (STEM) domains, where females often lag in mathematics and science (Ghimire, 2024). These inconsistencies invite further investigation into the sociocultural and structural dynamics that shape gendered learning trajectories. Eriksson et al. (2020) and Fonseca et al. (2023) highlight the subtle interplay of cultural norms and socioeconomic conditions, noting that although the gender gap in reading is marginal in high-income countries, it remains pronounced in low and middle-income contexts. Additionally, Chiu (2018) identifies psychosocial factors, such as motivation, parental support, and reading engagement, as critical drivers of the female literacy advantage, suggesting that affective and environmental influences may amplify gendered outcomes.

Moreover, researchers such as Mdleleni et al. (2021), Unterhalter et al. (2022), and Muyambi & Ahiaku (2025) reveal that persistent gender gaps reflect more profound systemic inequalities in access, quality, and educational outcomes. At the same time, Himmler and Jäckle (2018) and Blanchard (2023) reveal that literacy catalyzes employability and the proliferation of high incomes. Furthermore, other studies highlight the socioeconomic



inequalities and their impact on literacy. That is, individuals from lower socioeconomic backgrounds often face several limitations in literacy development due to multiple factors, such as limited access to books, inadequate language exposure, and insufficient parental support (Chiu, 2018; Eriksson et al., 2020; Fonseca et al., 2023). Several authors argue that addressing gender disparities in literacy development is central to achieving the Sustainable Development Goals (SDGs), specifically SDG 4 (quality education) and SDG 5 (gender equality) (Abdulkadri et al., 2022; Akinwale, 2023; Leal Filho et al., 2023).

While a wealth of literature on reading literacy exists, it predominantly focuses on academic populations, such as high school and university students, with a strong emphasis on educational outcomes and academic performance. A notable gap remains in studies that examine reading literacy within the general population. Those that do exist tend to focus narrowly on specific subgroups (Griese et al., 2023; Pakpour et al., 2023; Sansakorn et al., 2024), literacy in older adults (Oh et al., 2021), or are limited to systematic reviews and cross-sectional snapshots (Oh et al., 2021; Estrela et al., 2023). Additionally, this study conceptually integrates socioeconomic and demographic factors, combined with media exposure, to better understand their effects on shaping gendered literacy outcomes, using data from a pre-pandemic period. To our knowledge, this study represents the first comprehensive investigation into the determinants of reading literacy among the general South African population, utilizing nationally representative historical (pre-pandemic) data from the 2016 SADHS. Grounded in a gender sensitive analytical framework, the study addresses the following research questions:

1. What are the key determinants of reading literacy among males and females in South Africa, based on the 2016 SADHS?
2. How do socioeconomic factors (wealth index, employment) influence reading literacy differently for males and females?
3. What role do internet usage and media exposure play in shaping gendered literacy outcomes?
4. To what extent do demographic variables (age, urban/rural residence, province, educational attainment, marital status) mediate the relationship between gender and reading literacy?

Theoretical Background

There exist numerous theoretical foundations for grounding the concept of reading literacy. This study is grounded on the structural inequality theory (SIT) to provide rigidity for understanding how structural, individual, and contextual factors shape the gendered literacy outcomes. Naylor et al. (2019) define SIT as a framework that examines conditions where individuals experience unequal opportunities regarding roles, rights, opportunities, and decision-making compared to their counterparts. SIT positions us to consider how individuals make explicit and implicit positioning acts that determine whether they have access to the same opportunities and experiences as other groups. In our context, the legacy of apartheid dispensation resulted in a deeply bifurcated education system, where access to quality schooling was determined by race, geographic location, and socioeconomic status (Clercq, 2020).

SIT offers a critical foundation for constructing a cohesive analytical model that explains the differential



distribution of reading literacy. The persistent disparities in literacy outcomes are not merely the result of individual attributes or choices, but are systematically produced and sustained by entrenched institutional, socioeconomic, and socio-political structures (Sithomola, 2021; Khumalo & Alhassan, 2021; Nag, 2023). Within which, SIT manifests through the paradoxical effects of education and digital access resources traditionally associated with empowerment. Several studies reveal that individuals with higher levels of education and internet use exhibit better literacy outcomes, suggesting that access alone does not guarantee protection. Instead, these resources may proliferate exposure to literacy environments, amplify social expectations, or reflect greater awareness and reporting capacity (Arends et al., 2021; Gogus et al., 2024; Schmidt et al., 2015; Torraco, 2018; Croizet et al., 2019). By incorporating this theory, the analytical model can transcend surface-level associations and capture the deeper, systemic challenges, such as unequal access to protective infrastructure, gendered power relations, and digital divides, that shape individual experiences and outcomes.

Hypothesis Formulation

Socio-Economic Factors

In South Africa, disparities in access to quality education and literacy resources are closely tied to household income and employment conditions. Zickafoose et al. (2024) highlight that funding constraints and unequal resource allocation in Sub-Saharan Africa disproportionately affect marginalized communities, limiting access to inclusive and equitable education. Gendered dimensions of socioeconomic status further complicate literacy outcomes. Chikwe et al. (2024) demonstrate that women in low-income communities face compounded barriers to literacy due to limited access to financial resources, employment opportunities, and educational support. Furthermore, the authors also emphasize that community-based interventions, such as microfinance and vocational training, are effective in improving women's literacy and economic resilience, especially in low-resource communities. Khan et al. (2024) conducted a study examining gender differences among university students. They found that socioeconomic factors, such as parental income and employment status, have a more substantial influence on the academic performance of female students than on that of males. Based on the arguments, it can be hypothesized that:

H1: Socioeconomic factors (wealth index and employment status) are significantly associated with reading literacy, and these associations differ by gender, see Figure 1.

Media Exposure and Internet Usage

Different perceptions concerning the effects of watching television on reading literacy are evident in the literature. Supper et al. (2021) report no direct or indirect effect between watching television and reading. Interestingly, Skvarc et al. (2021) report that being from families with high socioeconomic status and watching educational programs without entertainment is associated with lower academic achievement. In another study, Jensen et al. (2016) found that exposure to research-based television programs had a significant impact on children's ability to read for leisure. Internet usage can be beneficial when used correctly, that is, to gather reading materials and interact with other people through blogs and social media platforms. According to Erwinda (2023), when the



internet is used for sourcing reading materials, students' reading comprehension is significantly improved. On the other hand, Derksen et al. (2022) highlight the benefits of restricted internet access in improving English and Biology test scores; interestingly, the improvement was observed among low achievers. It can, therefore, be hypothesized that:

H2: Access to internet usage and media exposure is positively associated with reading literacy, with more potent effects observed among females, see Figure 1.

Demographic Factors

Recent studies highlight the complex interplay between age, socioeconomic status, and literacy outcomes, challenging traditional narratives that literacy improves linearly with age due to accumulated experience and exposure. Evidence from South African studies suggests that adolescents aged 15–19 exhibit higher reading literacy than older adults, a trend attributed to improved access to educational resources, curriculum reforms, and digital integration (Makumbila & Rowland, 2016; Kasimba, 2024). In contrast, older generations were educated under historically unequal systems marked by under-resourced schools, limited access to quality instruction, and exclusionary pedagogies (Arends et al., 2021; Clercq, 2020; Khumalo & Alhassan, 2021; Soudien, 2024). According to Zickafoose et al. (2024), educational attainment remains a key determinant of reading literacy outcomes, with individuals who have completed secondary or tertiary education demonstrating higher literacy levels. These unique disparities are not merely a generational thing, but structurally embedded. Women, especially in rural and poor regions, face compounded barriers due to intersecting inequalities in education, employment, and access to digital infrastructure. These findings yielded the following hypotheses:

H3: Demographic variables (age, urban/rural residence, educational attainment, and marital status) significantly influence the relationship between gender and reading literacy, see Figure 1.

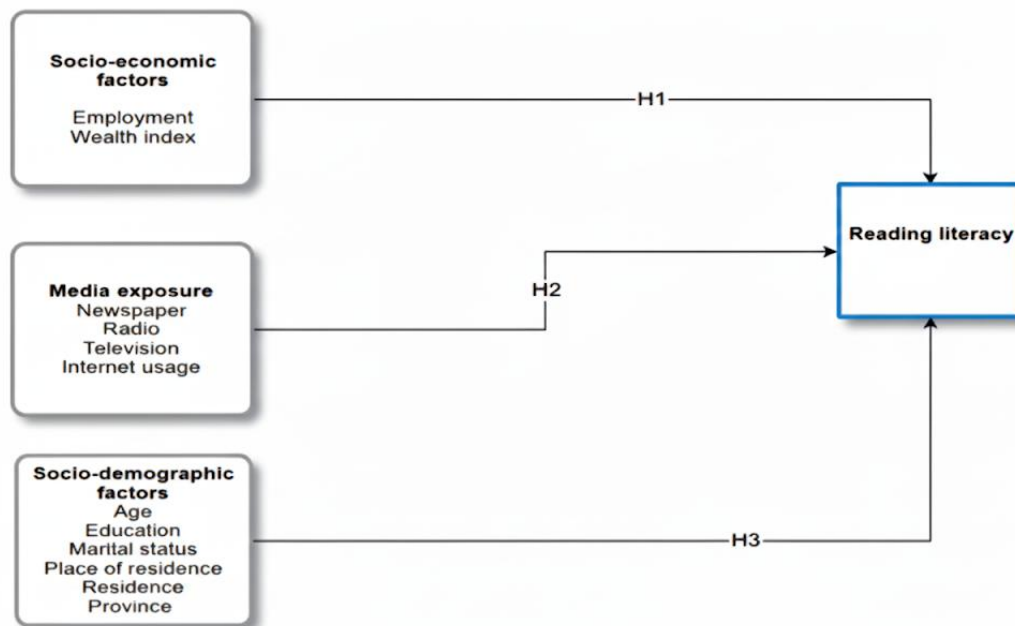


Figure 1. Conceptual Framework of Reading Literacy



Method

The study used a retrospective cross-sectional study design to analyze the determinants of reading literacy among participants. Data were collected through structured questionnaires administered to a representative sample of individuals across various provinces in South Africa. The SADHS 2016 includes all men aged 15–59 and women aged 15–49 who were residing in one of the nine provinces 24 hours prior to the survey. Statistics South Africa and the South African Medical Research Council sampled a total of 12,132 individuals, comprising 8,514 women (aged 15–49) and 3,618 men (aged 15–59). The survey used the 2011 South African population census as the master sampling frame and employed a stratified two-stage random sampling technique. In the first stage, enumeration areas (EAs) were stratified by province and categorized as either urban or non-urban. In the second stage, households were randomly selected from each of the EAs. To effectively utilize this rigorously determined sample size and ensure continuity and statistical power, this study will integrate and analyze all respondents from the original dataset who have complete information on literacy. Data were gathered on various demographic, socioeconomic, and educational variables.

These included age, gender, marital status, education level, employment status, wealth index, type of residence, and province of residence. Additionally, information on participants' media exposure (i.e., reading newspapers, listening to the radio, watching television, and using the internet) was collected from June to November 2016, using two questionnaires for males and females. The questionnaires are available online (<https://dhsprogram.com/pubs/pdf/FR337/FR337.pdf>) (National Department of Health [NDoH], 2019). The South African Demographic and Health Survey (SADHS) employed standardized DHS instruments, recognized globally for their methodological rigor and established face validity. Data collection was conducted by extensively trained field workers, with each team supervised by a senior professional nurse to ensure procedural trustworthiness. The instruments were uniformly administered across all provinces, thereby enhancing both the reliability and validity, as well as the cross-regional comparability of the data. Data were extracted from the DTA files and exported to Microsoft Excel using STATA version 16.1 (StataCorp, Texas, USA) for further editing and recoding.

The Excel spreadsheet was then exported to STATA for further analysis. Continuous data were tested for normality, and the results are represented as mean and standard deviation. Categorical data were represented using frequencies and percentages. To test for the association between reading literacy and socioeconomic and demographic factors, as well as media exposure, Chi-square tests were employed. Variables with a p-value less than 0.05 were considered statistically significant. Univariate analysis was conducted to identify significant determinants affecting reading literacy for both genders. Variables with a p-value less than 0.25 were considered for inclusion in the multivariate model (Hosmer et al., 2013). In the multivariate model, variables having a p-value less than 0.05 were statistically significant. The univariate and multivariate models were also used to determine the odds ratios for factors affecting reading literacy, while adjusting for potential confounders. All identifiers that could assist in identifying study participants were de-linked from the dataset. Participants were informed of the purpose of the survey and that they could withdraw at any stage without reason. The survey protocol (SADHS 2016) was reviewed and approved by the SAMRC Ethics Committee and the ICF Institutional Review Board.



Results

The study included 10,297 participants aged 15 to 95. The mean age was 39.24 ± 18.17 . Of these, over 50% were females, and 2964 (28.68%) of the participants were 50 years and above. KwaZulu-Natal had the largest number of participants, at 1,571 (15.20%), followed by Limpopo with 1,410 (13.64%). The Western Cape recorded the lowest number of participants, with 754 (7.29%). Most participants, 5,685 (55%), resided in urban areas, while 6,668 (64.51%) had attained secondary school education. Additionally, black participants were the largest group among the racial groups, comprising 8,752 (84.67%). Furthermore, 5,686 (55.01%) of the participants were single. Furthermore, the majority of the participants, 4174 (40.38%), belonged to the low-class wealth index. Table 1 summarizes the participants' demographic characteristics.

Table 1. Description of Participants' Demographic Characteristics

Variable	n (%)
Gender	
Female	6096 (59.20%)
Male	4201 (40.80%)
Age	
15-19	1435 (13.94%)
20-24	1287 (12.50%)
25-29	1202 (11.67%)
30-34	1056 (10.26%)
35-39	857 (8.32%)
40-44	798 (7.75%)
45-59	724 (7.03%)
≥ 50	2938 (28.53%)
Province	
Eastern Cape	1347 (13.08%)
Free State	1027 (9.97%)
Gauteng	1028 (9.98%)
KwaZulu-Natal	1566 (15.21%)
Limpopo	1409 (13.68%)
Mpumalanga	1216 (11.81%)
North West	1081 (10.50%)
Northern Cape	875 (8.50%)
Western Cape	748 (7.26%)
Place of residence	
Rural	4630 (44.96%)
Urban	5667 (55.04%)



Level of education	
No education	865 (8.40%)
Higher	952 (9.25%)
Primary	1821 (17.68%)
Secondary	6659 (64.67%)
Ethnicity	
Black	8722 (84.70%)
Coloured	984 (9.56%)
Indian/Asian	140 (1.36%)
White	451 (4.38%)
Marital status	
Divorced	174 (1.69%)
Living with a partner	954 (9.26%)
Married	2712 (26.34%)
Single	5674 (55.10%)
Widowed	783 (7.60%)
Wealth index	
Low	4152 (40.32%)
Middle	2246 (21.81%)
Upper	3899 (37.87%)
Employment	
Unemployed	6891 (66.92%)
Employed	3406 (33.08%)
Read a newspaper/magazine.	
Yes	6090 (59.14%)
No	4207 (40.86%)
Listen to the radio	
Yes	7558 (73.40%)
No	2739 (26.60%)
Watch television	
Yes	8409 (81.66%)
No	1888 (18.34%)
Use internet	
Yes	3875 (37.63%)
No	6422 (62.37%)

In Table 2, the results were highly significant, indicating the strong relationship between socioeconomic and demographic factors with reading literacy by gender. A closer examination of both genders reveals that reading literacy decreases with increasing age of the participants ($p < 0.05$). Residing in provinces of Limpopo, Mpumalanga, Eastern Cape, and North West is significantly associated with illiteracy among both males and



females ($p < 0.05$). Moreover, females residing in rural areas exhibit higher rates of illiteracy in reading than their male counterparts ($p < 0.05$). Interestingly, males without formal education demonstrate higher reading literacy levels than females without formal education, and the results were significant ($p < 0.05$). Additionally, widowed and married individuals of both genders show higher reading illiteracy compared to other marital status groups ($p < 0.05$). Furthermore, the study also highlights that unemployed males were more literate than unemployed females ($p < 0.05$), suggesting that employment status has a differential impact on reading literacy across genders. Moreover, both males and females who engage in reading newspapers or magazines and use the internet had higher reading literacy levels compared to those who primarily watch television or listen to the radio ($p < 0.01$).

Table 2. Summary of the Association between Ability to Read and Demographic Characteristics

Variable	Female		p-value	Male		p-value
	Reading literate			Reading literate		
	Yes (n = 5388)	No (n = 708)		Yes (n = 3761)	No (n = 440)	
Age						
15-19	717 (98.22%)	13 (1.78%)	< 0.001	679 (96.31%)	26 (3.69%)	< 0.001
20-24	668 (97.38%)	18 (2.62%)		565 (94.01%)	36 (5.99%)	
25-29	699 (98.31%)	12 (1.69%)		464 (94.50%)	27 (5.50%)	
30-34	600 (96.62%)	21 (3.38%)		406 (93.33%)	29 (6.67%)	
35-39	502 (96.35%)	19 (3.65%)		317 (94.35%)	19 (5.65%)	
40-44	431 (93.09%)	32 (6.91%)		303 (90.45%)	32 (9.55%)	
45-59	411 (90.53%)	43 (9.47%)		244 (90.37%)	26 (9.63%)	
≥ 50	1360 (71.20%)	550 (28.80%)		784 (76.17%)	245 (23.83%)	
Province						
Eastern Cape	679 (85.19%)	118 (14.81%)	<0.001	480 (87.27%)	70 (12.73%)	< 0.001
Free State	594 (92.24%)	50 (7.76%)		358 (93.47%)	25 (6.53%)	
Gauteng	529 (94.80%)	29 (5.20%)		439 (93.40%)	31 (6.60%)	
KwaZulu-Natal	854 (88.59%)	110 (11.41%)		550 (91.36%)	52 (8.64%)	



Limpopo	709 (82.25%)	153 (17.75%)		449 (87.74%)	98 (17.92%)	
Mpumalanga	587 (83.62%)	115 (16.38%)		451 (89.48%)	63 (12.26%)	
North West	504 (87.35%)	73 (12.65%)		451 (87.74%)	53 (10.52%)	
Northern Cape	481 (91.97%)	42 (8.03%)		320 (90.91%)	32 (9.09%)	
Western Cape	451 (96.16%)	18 (3.84%)		263 (94.27%)	16 (5.73%)	
Place of residence						
Rural	2266 (82.46%)	482 (17.54%)	< 0.001	1593 (84.64%)	289 (15.36%)	< 0.001
Urban	3122 (93.25%)	226 (6.75%)		2168 (93.49%)	151 (6.51%)	
Level of education						
No education	96 (16.61%)	482 (83.39%)	< 0.001	88 (30.66%)	199 (69.34%)	< 0.001
Higher	563 (100%)	0 (0%)		386 (99.23%)	3 (0.77%)	
Primary	856 (82.79%)	178 (17.21%)		627 (79.67%)	160 (20.33%)	
Secondary	3873 (98.78%)	48 (1.22%)		2660 (97.15%)	78 (2.85%)	
Ethnicity						
Black	4495 (87.18%)	661 (12.82%)	< 0.001	3156 (88.50%)	410 (11.50%)	< 0.001
Coloured	561 (92.73%)	44 (7.27%)		351 (92.61%)	28 (7.39%)	
Indian/Asian	74 (96.10%)	3 (3.90%)		62 (98.41%)	1 (1.59%)	
White	258 (100%)	0 (0%)		192 (99.48%)	1 (0.52%)	
Marital status						
Divorced	107 (91.45%)	10 (8.55%)	< 0.001	50 (87.72%)	7 (12.28%)	< 0.001
Living with a partner	485 (90.15%)	53 (9.85%)		364 (87.50%)	52 (12.50%)	
Married	1336 (88.89%)	167 (11.11%)		1051 (86.93%)	158 (13.07%)	



Single	3028 (92.77%)	236 (7.23%)		2216 (91.95%)	194 (8.05%)	
Widowed	432 (64.09%)	242 (35.91%)		80 (73.39%)	29 (26.61%)	
Wealth index						
Low	2014 (80.82%)	478 (19.18%)		1403 (84.52%)	257 (15.48%)	
Middle	1229 (90.17%)	134 (9.83%)	< 0.001	794 (89.92%)	89 (10.08%)	< 0.001
Upper	2145 (95.72%)	96 (4.28%)		1564 (94.33%)	94 (5.67%)	
Employment status						
Unemployed	3731 (85.87%)	614 (14.13%)		2225 (87.39%)	321 (12.61%)	
Employed	1657 (95.63%)	95 (5.37%)	< 0.001	1536 (92.81%)	119 (7.19%)	< 0.001
Read a newspaper/magazine						
Yes	2758 (100%)	0 (0%)		2751 (100%)	0 (0%)	
No	1076 (78.77%)	290 (21.23%)	< 0.001	1010 (69.66%)	440 (30.34%)	< 0.001
Listen to the radio						
Yes				3137 (91.35%)	297 (8.65%)	
No			< 0.001	624 (81.36%)	143 (18.64%)	< 0.001
Watch television						
Yes				3307 (91.86%)	293 (8.14%)	
No			< 0.001	454 (75.54%)	147 (24.46%)	< 0.001
Use internet						
Yes	2076 (99.43%)	12 (0.57%)		1763 (98.66%)	24 (1.34%)	
No	3312 (82.63%)	696 (17.37%)	< 0.001	1998 (82.77%)	416 (17.23%)	< 0.001



Determinants of Reading Literacy by Gender

The multivariate analysis identified several variables with exceptionally high odds ratios, indicating strong predictions with reading literacy. Education level was the most dominant predictor across both genders. Among females, those who attained secondary education had the highest odds (OR = 190.79; 95% CI: 124.61–292.10; $p < 0.001$). This unusually large OR may indicate quasi-complete separation, so we should be cautious in interpreting it and further consider confidence intervals and model diagnostics. Females with primary education were (OR = 24.89; 95% CI: 18.32–33.83; $p < 0.001$) more likely to be literate. Additionally, among males, the highest odds were observed in individuals with higher education (OR = 98.91; 95% CI: 28.61–341.99; $p < 0.001$), followed by those with secondary education (OR = 53.60; 95% CI: 34.95–82.20; $p < 0.001$) and primary education (OR = 9.26; 95% CI: 6.52–13.15; $p < 0.001$). Internet use was another significant predictor of reading literacy. Females who reported using the internet had nearly three times the odds of reading literacy (OR = 2.85; 95% CI: 1.43–5.67; $p = 0.003$), while males had more than threefold increased odds (OR = 3.60; 95% CI: 2.20–5.88; $p < 0.001$). Furthermore, age was particularly influential among females aged 15–19 years, who had significantly elevated odds compared to those aged 20 years and above (OR = 2.47; 95% CI: 1.27–4.79; $p = 0.007$). Males in the same age category also showed a strong prediction (OR = 2.87; 95% CI: 1.66–4.95; $p < 0.001$). Listening to the radio was associated with increased odds for both sexes. Females who listened to the radio had nearly double the odds (OR = 1.94; 95% CI: 1.47–2.54; $p < 0.001$), while males had a modest but significant increase (OR = 1.43; 95% CI: 1.06–1.94; $p = 0.018$). Employment status was significantly associated with females, with employed women having higher odds compared to males (OR = 1.74; 95% CI: 1.23–2.47; $p < 0.001$); however, this prediction was not statistically significant in the male group. The results are summarized in Table 3.

Table 3. Summary of Determinants of Reading Literacy by Gender

Variable	Female				Male			
	Univariate		Multivariate		Univariate		Multivariate	
	OR (95%CI)	p- value	OR (95%CI)	p- value	OR (95%CI)	p- value	OR (95%CI)	p- value
Age								
≥ 50	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
15-19	22.30 (12.77, 38.45)	< 0.001*	2.47 (1.27, 4.79)	0.007**	8.17 (5.38, 12.40)	< 0.001*	2.87 (1.66, 4.95)	< 0.001**
20-24	14.01 (9.30, 24.22)	< 0.001*	1.36 (0.74, 2.50)	0.322	4.91 (3.41, 7.08)	< 0.001*	1.00 (0.59, 1.68)	0.997
25-29	23.56 (13.20, 42.04)	< 0.001*	2.13 (1.07, 4.25)	0.032**	5.38 (3.56, 8.13)	< 0.001*	1.06 (0.61, 1.85)	0.824
30-34	11.55 (7.40, 18.05)	< 0.001*	2.00 (1.05, 3.79)	0.034**	4.38 (2.93, 6.56)	< 0.001*	1.12 (0.66, 1.91)	0.669



35-39	10.68 (6.69, 17.07)	< 0.001*	1.94 (1.04, 3.64)	0.038**	5.22 (3.22, 8.48)	< 0.001*	1.82 (0.99, 3.33)	0.053
40-44	5.45 (3.75, 7.91)	< 0.001*	1.86 (1.08, 3.22)	0.026**	2.96 (2.00, 4.38)	< 0.001*	1.60 (0.96, 2.68)	0.073
45-59	3.87 (2.78, 5.37)	< 0.001*	1.68 (1.03, 2.73)	0.036**	2.94 (1.91, 4.51)	< 0.001*	1.73 (0.99, 3.01)	0.053
Province								
North West	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Eastern Cape	0.83 (0.61, 1.14)	0.255	1.25 (0.77, 2.01)	0.363	0.81 (0.55, 1.18)	0.265	0.58 (0.35, 0.96)	0.033**
Free State	1.72 (1.18, 2.51)	0.005*	2.06 (1.14, 3.72)	0.017**	1.68 (1.03, 2.76)	0.039*	0.74 (0.39, 1.38)	0.338
Gauteng	2.64 (1.69, 4.13)	< 0.001*	1.58 (0.82, 3.05)	0.171	1.66 (1.05, 2.64)	0.031*	0.50 (0.27, 0.90)	0.021**
KwaZulu-Natal	1.12 (0.82, 1.54)	0.466	2.49 (1.51, 4.11)	< 0.001**	1.24 (0.83, 1.86)	0.289	1.20 (0.71, 2.03)	0.501
Limpopo	0.67 (0.50, 0.91)	0.009*	1.36 (0.84, 2.20)	0.216	0.54 (0.38, 0.77)	0.001*	0.23 (0.14, 0.38)	< 0.001**
Mpumalanga	0.74 (0.54, 1.01)	0.061*	1.06 (0.65, 1.75)	0.808	0.84 (0.57, 1.24)	0.383	0.48 (0.29, 0.81)	0.006**
Northern Cape	1.66 (1.11, 2.47)	0.013*	2.06 (1.03, 4.10)	0.040**	1.18 (0.74, 1.86)	0.493	1.01 (0.52, 1.95)	0.971
Western Cape	3.63 (2.13, 6.17)	< 0.001*	2.29 (0.94, 5.55)	0.067	1.93 (1.08, 3.45)	0.026*	0.42 (0.18, 0.97)	0.043**
Place of residence								
Rural	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Urban	2.94 (2.49, 3.47)	< 0.001*	1.12 (0.78, 1.62)	0.529	2.60 (2.12, 3.20)	< 0.001*	1.24 (0.89, 1.72)	0.207
Level of education								
No education	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Primary	24.15 (18.39, 31.70)	< 0.001*	24.89 (18.32, 33.83)	< 0.001**	8.86 (6.53, 12.02)	< 0.001*	9.26 (6.52, 13.15)	< 0.001**
Secondary	405.12 (282.87, 580.19)	< 0.001*	190.79 (124.61, 292.10)	< 0.001**	77.12 (55.05, 108.04)	< 0.001*	53.60 (34.95, 82.20)	< 0.001**
Higher	-	-	-	-	290.96 (90.91, 931.24)	< 0.001*	98.91 (28.61, 341.99)	< 0.001**
Ethnicity								
Black	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref



Coloured	1.87 (1.36, 2.58)	< 0.001*	1.30 (0.66, 2.57)	0.444	1.63 (1.09, 2.43)	0.016*	1.31 (0.68, 2.50)	0.422
Indian/Asian	3.63 (1.14, 11/54)	0.029*	2.97 (0.54, 16.51)	0.213	8.05 (1.11, 58.24)	0.039*	1.10 (0.14, 9.00)	0.927
White	-	-	-	-	24.94 (3.49, 178.46)	0.001*	3.13 (0.40, 24.60)	0.278
Marital status								
Married	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Divorced	1.34 (0.69, 2.61)	0.393	1.07 (0.39, 2.90)	0.899	1.07 (0.48, 2.41)	0.863	1.00 (0.33, 3.00)	0.998
Living with a partner	1.14 (0.83, 1.58)	0.419	0.85 (0.50, 1.42)	0.527	1.05 (0.75, 1.47)	0.766	0.81 (0.51, 1.27)	0.355
Single	1.60 (1.30, 1.98)	< 0.001*	0.98 (0.70, 1.38)	0.924	1.72 (1.37, 2.15)	< 0.001	0.62 (0.44, 0.89)	0.009**
Widowed	0.22 (0.18, 0.28)	< 0.001*	0.75 (0.52, 1.08)	0.128	0.41 (0.26, 0.65)	< 0.001	0.76 (0.40, 1.43)	0.390
Wealth index								
Low	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Middle	2.18 (1.77, 2.67)	< 0.001*	1.19 (0.83, 1.69)	0.345	1.20 (0.76, 1.89)	0.437	1.17 (0.83, 1.63)	0.371
Upper	5.30 (4.22, 6.66)	< 0.001*	2.97 (0.94, 2.35)	0.090	3.36 (2.05, 5.51)	< 0.001	1.45 (1.03, 2.06)	0.035**
Employment status								
Unemployed	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Employed	2.90 (2.32, 3.63)	< 0.001*	1.74 (1.23, 2.47)	< 0.001**	1.86 (1.49, 2.32)	< 0.001	1.27 (0.95, 1.70)	0.103
Listen to the radio								
No	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Yes	3.56 (3.03, 4.18)	< 0.001*	1.94 (1.47, 2.54)	< 0.001**	2.42 (1.95, 3.01)	< 0.001	1.43 (1.06, 1.94)	0.018**
Watch Television								
No	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Yes	3.96 (3.36, 4.66)	< 0.001*	1.18 (0.87, 1.59)	0.285	3.65 (2.93, 4.56)	< 0.001	1.44 (1.06, 1.97)	0.021**
Use internet								
No	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Yes	36.36 (20.49, 64.50)	< 0.001*	2.85 (1.43, 5.67)	0.003**	15.29 (10.09, 23.19)	< 0.001	3.60 (2.20, 5.88)	< 0.001**



Discussion

The findings of this study reveal a complex interplay between education, internet access, age, and media exposure in shaping the reading literacy outcomes. Individuals with secondary and tertiary education exhibited significantly higher odds of literacy, with particularly pronounced effects among females who had completed secondary education. Consistent with the study finding, several studies (Firat & Koyuncu, 2023; Pamuk et al., 2023; Mihret & Joshi, 2025) report the incremental effect of educational level on reading literacy levels. Inconsistent with the study finding, Liu et al. (2022) show that individual and family-level factors outweigh school-level determinants in predicting literacy, further challenging the idea that educational level alone determines literacy outcomes, similarly, Li et al. (2025) further shows that socioeconomic status and home learning environment mediate reading ability more than grade level, suggesting that educational level alone is not the primary driver of literacy. Furthermore, Leachman et al.'s (2025) findings were also consistent with the study findings; the authors showed that the correlation between reading text and reading comprehension decreased with an increase in educational level. The findings of this study converge with the conventional assumption that education uniformly enhances literacy. However, educational attainment may function as a double-edged sword, facilitating access to literacy-enabling resources for those with high socioeconomic status, while simultaneously exposing structural limitations in contexts of systemic educational inequality and low socioeconomic status. This paradox is best understood through the lens of the SIT, which asserts that institutional norms, access to capital, and representational power systematically reproduce social and cognitive disparities (Eybers & Paulet, 2022; Croizet et al., 2019). Education, while a critical driver of empowerment, operates within historically uneven systems that often fail to translate access into equitable literacy outcomes. Arends et al. (2021) and Soudien (2024) argue that the South African education system continues to reproduce substandard outcomes due to entrenched inequalities rooted in apartheid-era legacies of race, gender, and geography. The elevated literacy odds among educated individuals may reflect increased awareness and reporting, but more critically, they may reveal the structural limitations of education in environments lacking adequate resources and pedagogical support (Firat & Koyuncu, 2023; Pamuk et al., 2023).

Digital access, particularly radio and internet use, emerged as a significant predictor of reading literacy, further highlighting the role of the digital divide as a contemporary manifestation of socio-cultural stratification. While digital access is often perceived as a tool for inclusion, studies by Duma et al. (2021) and Derksen et al. (2022) highlight that unbalanced digital literacy and infrastructure exacerbate disparities in reading literacy, among others. Individuals who use the internet, particularly those with higher educational attainment, may be more exposed to online misinformation or exploitative content, especially in the absence of robust digital literacy frameworks (Reddy et al., 2023; Samanta, 2025), and this finding was inconsistent with our finding, which did not account for misinformation of media exposure. This argument aligns with the evidence presented by Naylor and Mifsud (2019), which suggests that structural inequalities in higher education extend into digital domains, reinforcing exclusion even among underprivileged populations. The reason for this result could be that South Africa has unequal access to digital infrastructure, especially between urban and rural areas. Internet use strongly predicts literacy because individuals with access often belong to households with better resources, thereby reinforcing socioeconomic stratification. Also, historically disadvantaged communities still face limited connectivity and affordability issues, making digital access a marker of privilege rather than universal inclusion.



Age-related trends further complicate the literacy landscape; adolescents aged 15–19 years demonstrated higher literacy outcomes compared to older adults, challenging developmental assumptions that literacy improves with age. This generational reversal reflects the impact of recent curriculum reforms, digital integration, and targeted literacy interventions that emphasize reading fluency and comprehension (Makumbila & Rowland, 2016; Kasimba, 2024). In contrast, older adults were educated under historically unequal systems characterized by limited access, under-resourced schools, and exclusionary pedagogies (Clercq, 2020; Arends et al., 2021; Khumalo & Alhassan, 2021; Soudien, 2024). From the SIT perspective, these disparities are not merely generational but structurally embedded, shaped by access to institutional support, cultural capital, and responsive pedagogies (Eybers & Paulet, 2022; Street, 1984). The reason for this finding may be that adolescents (15–19 years old) have benefited from recent curriculum reforms that emphasize reading fluency, comprehension, and digital integration. These reforms introduced literacy-focused interventions and improved teaching strategies, giving younger participants an advantage. Furthermore, younger learners are often exposed to technology and online resources, which complement traditional reading practices. Schools are also increasingly incorporating Information and Communication Technology tools and e-learning platforms, which older generations did not have access to.

Implications and Recommendations

Practical Implications and Recommendations

The study findings can be practically applied through several strategic steps to improve reading literacy. Targeted educational programs should be developed, focusing on different age groups, particularly younger participants aged 15-19 years, to maintain and enhance literacy skills as they grow. Gender sensitive initiatives are essential to address the unique challenges faced by both genders, such as mobile libraries and community reading groups for females in rural settings. Regional inequalities necessitate customized literacy programs for provinces such as Limpopo, Mpumalanga, Eastern Cape, and North West, where illiteracy rates are higher. Additionally, distinct strategies for urban and rural settings, such as establishing reading centers and providing digital literacy tools, can help bridge the gap between urban and rural areas.

Leveraging media and technological tools is important; encouraging the use of newspapers, magazines, and the internet can disseminate educational content widely. Moreover, promotion of digital literacy through access to e-books and online resources can significantly improve reading literacy levels, especially in remote areas. Furthermore, workplace literacy programs that target unemployed individuals and support employed individuals through workplace learning initiatives can improve both literacy and employability. Community collaboration, on the other hand, is vital, with community-based programs and family literacy initiatives fostering a culture of reading at home. Moreover, policy development and advocacy campaigns informed by the study's findings can help reduce literacy inequalities and provide equitable access to quality education.

Based on these findings, several key recommendations emerge for policymakers, educators, and community stakeholders. First, it is essential to incorporate media exposure into lesson plans and curricula to improve reading



literacy and academic performance in both young and older adults. Educational institutions should integrate newspapers, digital media, and internet-based resources as core components of literacy instruction, recognizing their significant role in shaping reading outcomes.

Second, distinct strategies tailored to urban and rural settings must be initiated. This includes establishing accessible reading centers in underserved communities and providing digital literacy tools at zero cost to bridge the technology gap. Special attention should be given to provinces with high illiteracy rates, such as Limpopo, Mpumalanga, the Eastern Cape, and the North West, where targeted interventions can have the most substantial impact.

Third, gender-responsive programming should be prioritized, ensuring that interventions address the unique barriers faced by males and females in a differentiated manner. For instance, mobile libraries and community reading groups may be particularly effective for females in rural settings, while alternative engagement strategies may be needed for males showing lower literacy rates.

Fourth, policymakers should leverage the findings to develop evidence-based literacy policies that ensure equitable access to quality education across all demographic groups. This includes allocating resources to digital infrastructure, particularly in rural areas, and supporting workplace literacy programs that enhance both literacy skills and employability outcomes. Finally, future research should employ longitudinal designs to establish causal relationships between internet use, educational attainment, and reading literacy, while also examining the evolving impact of digital technologies on literacy development in the post-pandemic context.

Theoretical Implications

The findings of this study have several important theoretical implications for understanding literacy development within the framework of structural inequality. By demonstrating that internet use, educational attainment, and media exposure significantly influence reading literacy, the study reinforces the theory of new literacies, which states that digital engagement is central to modern literacy practices. Furthermore, the observed gender differences and regional disparities underscore the relevance of structural inequality theory, indicating that access to resources and opportunities is unevenly distributed across various settings. These theoretical implications underscore the need to reconceptualize literacy as not only a cognitive skill but also a socially embedded practice shaped by technology, gender, and socioeconomic status.

Limitations of the Study

Despite the valuable insights provided, this study has several limitations that should be acknowledged. Firstly, the use of cross-sectional data from the 2016 SADHS restricts the ability to establish causal relationships between internet use, educational attainment, and reading literacy. Additionally, key variables such as internet access, media exposure, and literacy status are based on self-reported responses, which may be subject to recall bias or social desirability bias. The measurement of reading literacy itself may not fully capture the complexity of literacy skills, including comprehension and digital literacy. Moreover, the data reflect conditions from 2016, and



significant changes in digital access and educational practices, particularly following the COVID-19 pandemic, are not well represented. These limitations suggest the need for cautious interpretation of the findings and highlight areas for future research.

Conclusion

The study examined the determinants of reading literacy by gender, utilizing the 2016 South African Demographic and Health Survey data. Socioeconomic and demographic variables, as well as media exposure, were associated with reading literacy in both genders. The multivariate logistic regression model underpinned factors such as age, educational attainment, and internet usage as key predictors of reading literacy. The study also revealed socioeconomic and regional inequalities that necessitate customized literacy programs for provinces such as Limpopo, Mpumalanga, the Eastern Cape, and the North West, where illiteracy rates are higher. Moreover, the study further demonstrated the benefits of media exposure, including reading newspapers, listening to the radio, watching television, and using the internet, in shaping reading literacy outcomes.

Author(s)' Statements on Ethics and Conflict of Interest

Ethics Statement: We hereby declare that research/publication ethics, as well as citation principles, have been considered throughout all stages of the study. We take full responsibility for the content of the paper in the event of any dispute. This study does not involve qualitative or quantitative data collection methods that require ethics committee approval, such as surveys, interviews, focus groups, observations, experiments, or similar techniques. Therefore, obtaining approval from an ethics committee is not required for this research.

Statement of Interest: We have no conflict of interest to declare.

Data Availability Statement: Data are publicly available on Data First.

Author Contributions: All authors contributed to the conception and design of the study. **OP Mokoena** was responsible for data collection, formal analysis, and drafting the manuscript. **EL Sesale** contributed to the methodology, interpretation of results, and critical revision of the manuscript. All authors read and approved the final manuscript.

Funding: None

Acknowledgments: None

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