

Literacy and Quality of Life: A Study of Adults with Poor Literacy Capabilities in Western Rwanda

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This article explores the quality of life of adults with poor literacy capabilities (reading, writing and numeracy) in western Rwanda. A concurrent mixed methods research design was used. Data was collected from respondents aged 18 years and over through a survey and focus group discussions. Quantitative results from linear regression analysis indicate a clear relationship between literacy and life satisfaction in that literacy has a direct and indirect path to explaining quality of life. Qualitative results from thematic analysis identify three main pathways in which subjective quality of life is impacted by illiteracy or low literacy capabilities, namely: economic, familial, intrapersonal and interpersonal. Access to, and participation in, quality adult literacy education has the potential to enhancing subjective quality of life by developing relevant literacy capabilities in individuals.

Keywords: literacy, illiteracy, adult literacy education, subjective quality of life, Rwanda

1. Introduction

This article is concerned with the quality of life of adults with poor literacy¹ capabilities in western Rwanda. In this paper, we have adopted UNESCO's definition of literacy to mean "a continuum of learning and proficiency in reading, writing and using numbers throughout life. [This] is part of a larger set of skills, which include digital skills, media literacy, education for sustainable development and global citizenship as well as job-specific skills" (UNESCO, 2018). Literacy constitutes a fundamental right and an enabler for fulfilling other rights (UNESCO Institute of Statistics [UIS] 2017a, b; UNESCO 2015; 2005). Literacy education is viewed as an important means for enhancing human development (UNESCO 2015; United Nations 2015; Epstein and Yuthas 2013; UNESCO Institute for Lifelong Learning [UIL] 2010) through expanding real freedoms that people enjoy, expressed as capabilities (Sen 1999). Literacy education not only expands human capabilities, but also, enables individuals

¹ By poor literacy, we mean individuals who say they cannot read and write a simple note, measured through a self-assessment questionnaire for those 15 years or older.

to lead a life they value. Literacy education is considered a “prerequisite for personal, social, economic and political empowerment” (UIL 2010). It enables individuals to thrive by experiencing good health, having healthy children, and improving their livelihoods.

Literacy can also be emancipatory in that it can help raise awareness of unfavourable patriarchal structures that subjugate certain sections of society, e.g., women (Robinson-Pant 2008). For example, where women have better knowledge of their legal, health, marital and land ownership rights, this can redress gender inequality and marginalisation (UNESCO 2005). Furthermore, the ability to read, write and calculate can afford women in certain communities the opportunity to be confident and empowered to take control over their lives. Based on the documented potential of literacy capabilities, it is important for quality adult literacy education to be accessible to all as a public good (Boyadjieva and Ilieva-Trichkova 2018).

At an international level, the importance of literacy education is encapsulated in the Belém Framework for Action, which notes that adult literacy education can play a critical role in enhancing quality of life and maximizing capabilities (Milana, Holford, Hodge, Waller, and Webb 2017). While adult literacy education continues to receive global attention (UNESCO 2015; UIL 2010; UNESCO 2005), it has not always been prioritised financially in many low-and- lower-middle-income countries [LMICs] (Benavot 2015), including in Rwanda (Abbott, Mugisha, Mtika and Nzabalirwa 2020). This is evident in the number of adults who are still illiterate globally. There are roughly 750 million adults around the world in 2016 who were considered illiterate, and most of these were women (UIS 2017a, 2017b). According to the World Development Indicators, in 2020, 90% of men (aged 15 years and over) were literate against 83% of women. For low-income countries, 72% of men were literate against 59% of women (UIS 2021). For example, in Rwanda, literacy rate for 15 years and older, was around 73%, and when disaggregated according to gender, literacy rate

of men was 77.5% and for women it was 69% (National Institute of Statistics of Rwanda [NISR], 2018). The fact that literacy disparity is based on gender is a source of great concern. It exacerbates other inequalities, such as household decision-making, which affects women adversely (Robinson-Pant 2008).

It has also been reported that many LMICs are not allocating enough financial and other resources towards adult literacy education programmes (UNESCO 2015). For instance, a study in Rwanda showed that even though the country has a national adult literacy education policy, the provision of adult literacy education is ineffective due to poor funding, lack of trained literacy tutors, and lack of coordination among adult literacy education providers (MINEDUC 2014; Abbott et al. 2020).

The need for adult literacy education in many LMICs is partly driven by inefficiency of the primary education sector, where most primary school leavers exit without developing the necessary proficiency in literacy and numeracy (UIS 2017a). In addition, before the introduction of ‘free’ primary education in many LMICs in the early 90s, there were limited opportunities for individuals from disadvantaged backgrounds to complete primary education. However, even after the introduction of ‘free’ primary education, there are other factors which continue to hinder children from disadvantaged backgrounds from attending and completing primary school, especially girls, those from poor homes, and children with disabilities (Ravet and Mtika 2021; Williams, Abbott, Mupenzi 2015). A study in Rwanda assessing Millennium Development Goal (MDG) number 2 using the 2010 household survey, reported that only about 50% of children in school were projected to complete primary school by their 19th birthday. This was attributed to ‘hidden school-related costs’, such as after-school coaching, examinations fees (Williams et al. 2015), and poor quality of primary education (Bird, Chabé-ferret, and Simons 2022).

Rwanda, the context of our study, set out an ‘ambitious’ policy to improve the quality of life of its citizens through education as reflected in the Vision 2020. The policy aims to have “a literate society where every citizen has access to and makes full use of reading and writing, numeracy and life skills for personal, family, community, and national development” (MINEDUC 2014, xi). Rwanda hoped to achieve 100% adult literacy rate by 2020 (Ministry of Finance and Economic Planning 2000), however, this is yet to be achieved. In fact, by 2016/17 there was over 36% of women² and over 26% of men in Rwanda who could not read and write a simple note or do a written calculation (Authors’ calculation from EICV 5 data).

In this paper, we investigate the relationship between poor or low and its connection with subjective quality of life in the western province of Rwanda.

2. Subjective quality of life

Subjective quality of life denotes how satisfied a person feels within their social and value systems (Camfield 2012). It focuses on both tangible and non-material aspects of life (de Haan and Zoomers 2005; Costanza 2007). It is important to note that quality of life involves both objective and subjective assessment of people’s welfare. Objective assessment of quality of life considers normative aspects, while subjective view considers individualised perceptions and experiences of life (Edgerton, Roberts, and von Below 2012).

There are various factors associated with subjective quality of life, such as age, gender, intimacy and marital status, socio-economic status and material well-being, education, health and emotional well-being, productivity, and safety (Lodhi, Rabbani, Khan, Irum, and Holakouie-Naieni 2020; Cummins 1997). Research using the World Values Survey (WVS) has found that the main predictors of life satisfaction in Rwanda are economic circumstances, health, gender, trust, and control over one's life with economic circumstances

² The literacy rate is usually reported for those aged 15+ years but our research focused on those aged 18 or over as this is the target group for adult literacy provision in Rwanda.

being the main predictor (Authors D 2012; Ngamaba 2016). Research has also shown that economic circumstance is the main predictor of subjective quality of life, with education and employment making independent but smaller contributions (Atkinson 2007). Literacy education forms a possible pathway to quality of life by expanding human capabilities (Sen and Nussbaum 1993; UNESCO 2015).

In our research, we consider people's literacy and how this relates to, and/or affects, subjective quality of life in a low-income context of western province in Rwanda. Although the relationship between education (but not literacy per se) and quality of life especially in high income countries, is well established, there has been less research especially in low-income countries. There is also limited research that uses quantitative and qualitative data to explore literacy and its connection with subjective quality of life in such contexts. In the study, we investigate the relationship that exist between individuals' literacy skills and their subjective quality of life. We also explored the experiences and views of individuals with poor literacy in relation to subjective quality of their life. Our research was underpinned by the following research questions:

- a. Is there a relationship between individuals' literacy capabilities and their subjective quality of life in western Rwanda?
- b. How do individuals with 'poor' literacy capabilities in western Rwanda experience and perceive their quality of life?

2.1 Rwanda context

Rwanda is one of the least developed countries with donor aid making up 11.9% of its gross national income (GNI), which was 59.5% of the central government expenses in 2019 (World Bank, 2021). It is in the low human development category and is ranked 160 out of 189 countries and territories in the 2019 Human Development Index (UNDP 2020). The country is characterized by low gross domestic product (GDP) per capita, a dense population, with around 82% of the population living in rural areas. The EICV 5 estimated the poverty level

(those living below the poverty line of US\$1.90 a day) at around 56.5% nationally. Most of the population rely on small-scale subsistence agriculture for their livelihoods (NISR 2018). Our survey in the western Rwanda showed that 24% of those living in rural areas were landless and a further 60% owned plots that the Food and Agricultural Organization consider too small to sustain a household.

Rwanda's literacy rate (measured through a self-assessment questionnaire on whether the respondent say they can read and write a simple note, for 15 years and older) is estimated to be around 73%, with a disaggregated literacy rate for men being 77.5% and that for women being 69% (NISR 2018). The Rwandan government sees literacy education and education in general, as essential for enhancing people's capabilities and alleviation of living standards (MINEDUC 2014; Republic of Rwanda 2003). Adult literacy education is perceived to be an important route out of 'a deeply unsatisfactory social and economic situation' (Ministry of Finance and Economic Planning 2000). However, existing adult literacy education provision in the country can be described as rudimentary, underfunded, and uncoordinated. It is largely implemented by faith-based, local, or international NGOs and relies on volunteer tutors (Authors A 2020). Rural areas of Rwanda have higher incidences of illiteracy compared to urban areas.

The western province has the lowest literacy rate and the highest level of child malnutrition, which is correlated with mother's low education (World Bank-Rwanda 2018). Our survey of adult literacy in the province shows that 21% of the urban population cannot read and write a simple note while in rural areas, 36% cannot. The province is also the poorest in Rwanda, with 69% of the population living in poverty (NISR 2018). The region suffers most from food insecurity (World Food Programme 2016). The province is also more rural than the Rwanda average, with 93% of adults living in rural areas (Authors' own calculation of the Literacy Survey data set).

The main occupation for over 75% of those aged 18 and above is in the agriculture sector, of which 17% are in waged employment, 30% independent farmers, and 28% dependent family workers (authors own calculation of the Literacy Survey data set). The rest are in low paid precarious informal sector employment. Compared with the national average, the province has a lower educational attainment, and only seven percent of people say they are computer literate (NISR 2018).

3. Research methods

3.1 Research design

In this study, we adopted a concurrent mixed method research design using a survey and focus group discussion. The survey questionnaire and the agendas for the focus group discussions (FGDs). The use of mixed method design in this study allowed for possible corroboration, integration and consolidation of data or research findings (Guest 2012).

3.2 Sampling and target population

The sampling for the quantitative survey strand was through a stratified probability technique with all adults aged 18 years and over living in the community having an equal chance of selection. The province was stratified by district and by urban/rural location in each district. The sample of villages and households were randomly selected from lists provided by the NISR. At the household level, the adult member who had most recently had a birthday was interviewed. The target sample was 2,420 individuals, and the achieved sample was 2,391 (98.8%). The sample was based on the NISR estimate for the 18 years and over population of western province in 2018 of 1,461,938. Sampling had a margin of error of 2-3% and standard error of 95%.

For the qualitative data, we sampled 14 FGDs, each with eight participants representative of men and women who wanted to join or were already attending an adult literacy class. The participants were adults who defined themselves as ‘illiterate’ and included men and women of different ages, from 18 years and over. Most of the participants were married and had children (from one child to eight children per household). The livelihoods of the participants revolved around semi-subsistence farming and other informal income sources.

3.3. Research instruments and data collection

The survey was used to gather demographic data and data on education and employment, literacy and numeracy skills, use of literacy in everyday life and demand for adult literacy education. The survey questionnaire and the agenda for the FGDs were drafted in English and translated into Kinyarwanda by a native speaker. The translation was quality-assured by two other native speakers. The survey questionnaire and FGD agenda were piloted and amended in the light of feedback from the pilots. Both the quantitative survey and FGDs were conducted in Kinyarwanda.

The FGDs lasted between 1 to 1.5 hours. During the discussions, two note takers took notes in English while the FGDs were also audio-recorded. The two note takers compared their set of notes and then used the audio-recording to verify and add aspects that they had not managed to write down during the discussion. Data collection took place between November 2017 and October 2018.

We obtained ethical approval for the research from the University of Aberdeen’s Arts, Social Sciences and Business Research Ethics and Governance Committee. In addition, we were granted a survey license from the National Institute of Statistics of Rwanda. All participants gave informed consent after being told the rationale of the project. The participants were assured of their rights to withdraw, anonymity and confidentiality.

All researchers and data collectors had relevant experience of administering quantitative survey and FGDs and they received specific training to support them during this research.

3.4 Data analysis

Quantitative survey data were transferred to SPSS Version 23 and the data was quality assured. The Wealth Scale is based on the Rwanda Demographic and Health Survey Scale, and constructed using the DHS guidelines (Rutstein 2015). In this paper, we use the survey to explore the relationship between literacy and quality of life. To do this we carried out a linear regression with the dependent variable being a 10-point scale (Cantrell's Ladder) where respondents were asked to place themselves on a ladder going from 1 to 10, with 1 being 'totally dissatisfied' with their lives and 10 being 'totally satisfied'. We used as control variables, 'age in years', 'gender', 'wealth scale', 'owns land'³ and 'married' recoded as single never married, married/cohabiting, and divorced/separated/widow/widower. The main variable of interest was 'literacy' computed from questions that asked about reading, writing and numeracy skills. The scale had four values: (1) 'not able to read and/or write a simple passage and /or do simple arithmetic using all four rules'; (2) 'ability to read, write and do simple arithmetic using all four rules but difficult in doing at least one'; 'easily able to read and write and do simple arithmetic using all four rules but not able to do one or more very easily'; and 'able to do all three easily'.

All the independent variables correlate with life satisfaction ($p < 0.01$). Age and the Wealth Index had a linear relationship with subjective life satisfaction. Apart from age and gender, we computed the variables so that those that we assume will be predictors of life

³ Land ownership is not just a marker of present wealth but of the economic circumstances of the family of origin as most land in Rwanda is received as a gift from parents or an inheritance. Being landless is a marker of extreme poverty.

satisfaction will have positive values. The control variable for marital status is ‘Separated, Divorced, Widowed, Widower’ as the single order correlation showed that these were the least satisfied.

For literacy we used the lowest category, ‘Unable to read and write and do simple written calculations using the four rules’ as this category had the lowest mean score for satisfaction. Gender was coded 0, for women and 1 for men, and land ownership was coded 0 ‘no land’ and 1 ‘owns land’. We tested the model for multicollinearity and the tolerance level was satisfactory. We then carried out a linear regression with the Wealth Index with the dependent variables, being ‘gender’ ‘age’ ‘marital status’ as control variables and ‘literacy’.

Qualitative data from the FGDs was analysed thematically in connection with the second research question, which focused on participants’ experiences and perceptions about their quality of life based on their poor or [il]literacy circumstances. The themes generated were linked to subjective quality of life notions of economic, familial, intrapersonal and interpersonal welfare.

4. Results

4.1 Quantitative findings

Our results show that there is a clear relationship between satisfaction with life, literacy and economic wellbeing (Tables 1 and 2). We tested the model for collinearity and the tolerance was greater than .4 and variance inflation factor (VIF) values lay between 1 and 10.

In Model 1, Table 1, we tested the relationship of the control variables with life satisfaction and explained 16% of the variance. All the variables made a significant contribution with the ‘wealth index’ making the largest contribution followed by ‘ownership of land’. The regression shows that people from wealthier households that own land, younger people, those that are single or married and men, are more satisfied with their lives compared to those from less wealthy households without land, divorced ‘widowed people and women.

Table 1. Linear regression: satisfaction with life and literacy

Variable	Model 1			Model 2			Model 3		
	b	SE	B	b	SE	B	b	SE	B
Constant	2.75	1.95		2.458	.208		2.116	.214	
Gender	.181	.085	.043*	.126	.085	.03 ^{ns}	.056	.088	.013 ^{ns}
Age in years	-.011	.033	-.081***	-.007	.003	-.055**	-.005	.003	-.041***
Single	.533	.181	.077**	.454	.181	.065**	.519	.188	.075***
Married	.414	.118	.090***	.397	.117	.087** *	.529	.122	.116***
Divorced/widower/widowed (control)									
Household owns land	.831	.100	.158***	.814	.100	.155** *	.831	.104	.158***
Wealth Index	.657	.040	.315***	.586	.042	.281** *			
Fully literate and numerate				.563	.134	.096** *	1.223	.13	.209***
Functionally literate and numerate				.414	.103	.088** *	.643	.106	.137***
Emerging literacy				.016	.115	.003 ^{ns}	.099	.120	.018 ^{ns}
Not literate (control)									
R ² adjusted	15.7			16.6			9.9		

Note: Dependent variable ‘satisfaction with life’.

***p<0.001, **p>.01. *p<.05

When we add the literacy variables (Model 2), the variance explained increases significantly (p>0.001) and the variance explained increased to 17%. The amount of variance explained by the wealth index decreases somewhat, although it continued to make the largest contribution to the variance explained, and gender was no longer significant. Those that are fully literate and those that are functionally literate are significantly more likely to be satisfied than those that have emerging or no literacy skills.

In Model 3, we remove the wealth index, and the remaining variables explained less of the variance, 10%, with the two literacy variables contribution to the variance explained increasing significantly.

When we regressed the control and literacy variables⁴ on the wealth index (Table 2), the model explained 14% of the variance, with the three literacy variables contributing significantly and those with literacy skills more likely to score highly on the wealth index than those with no literacy skills. The largest contribution to the variance is explained made by being fully literate but functional literacy also makes a noticeable contribution.

Table 2. Linear regression: wealth index and life satisfaction

Variable	b	SE	B
Constant	-.563	.097	-5.797***
Gender	-.120	.041	-.060**
Age in years	.003	.001	.053*
Single	.117	.087	.035 ^{ns}
Married	.232	.057	.106***
Divorced/widower/widowed (control)			
Fully literate and numerate	1.125	.061	.401***
Functionally literate and numerate	.389	.049	.173***
Emerging literacy	.141	.056	.053**
Not literate (control)			
R ² adjusted	14.3		

Note: dependent variable Wealth Index

***p<0.001, **p>.01. *p<.05

The analysis suggests that people with at least functional literacy skills (i.e., those who can competently read and write a simple passage and do simple calculations using all four rules), are more satisfied with their lives than those that do not have these skills. Having literacy skills has a direct influence on satisfaction with life and an indirect influence through people

⁴ 'Ownership of Land' did not make a significant contribution to the variance explained so we run the mode without including it in the regression model.

with literacy skills having a higher standard of living. As such, we can hypothesize that those that have literacy skills are able to make a better living.

4.2 Qualitative findings

The quantitative analysis has shown that literacy contributes to quality of life both directly and indirectly. Our qualitative analysis aims to show how individuals with no or limited literacy in Western Rwanda perceived their quality of life. In summary, individuals with poor literacy were less satisfied with their lives. These individuals highlighted three areas; namely, economic, familial, inter/intrapersonal, where they felt their quality of life was undermined. The findings also highlighted motivation for the participants going to literacy classes.

4.2.1 Economic quality of life

Participants commented on their unfavourable life experiences in relation to economic welfare and how lack of basic literacy was implicated in this. The findings related to employability, entrepreneurial opportunities, and farming practices.

Limited employability

The participants we interviewed were dissatisfied with their lives because of their unfavourable economic situations and poor living standards. This was seen by them as caused by their not being able to get employment because they did not have relevant literacy skills.

The quotes from FGDs below represent some of the experiences shared by participants:

They wanted to give me a job to work in a canteen, but because I cannot read or write, I failed to work there (Karongi, female, 49 years).

I lost a job of managing timber due to poor calculation issues. They sometimes asked me to count the number of timbers, which I could not (Nyamasheke, male, 18 years).

Someone gave me a job in a hotel where I was supposed to be offering clerical services, but I lost that position because I cannot read or write (Karongi, male, 26 years).

The participants reflected on how lack of literacy hindered them from taking up jobs available within their communities. The highlighted jobs required someone to have skills of reading and counting. However, the participants did not have these skills.

Some of the respondents indicated that they had secured informal work, but this tended to be precarious in nature and the earnings were below the poverty line (US\$1.90/day). For example, one participant had this to say:

I carry out casual work. This involves looking after someone's cow and working on other people's farmlands. I get paid 1000 Rwandan Francs (RWF) [US\$1.15] at the end of the day (female, 35 years, Karongi).

These findings point to economic barriers for individuals who lack literacy skills experienced. Being in some form of meaningful work enables individuals to generate income which they could use to purchase farm inputs (e.g., fertilizer and improved seeds, as discussed in a subsequent finding under farming practices). However, casual farm work depicted above is the lowest paid of any work and those who depend on it are amongst the poorest households. Further, this type of work also tends to be seasonal and unsustainable. Those who are involved in it tend to have no land of their own.

Entrepreneurial opportunities

Participants wanted to set up entrepreneurial activities as a means of enjoying a way of life they valued. However, they were unable to venture into certain entrepreneurial activities due to their inability to read, write and count. This shows that even running a household enterprise required literacy skills. For example, they could not obtain a driving license or train as a tailor, which could have afforded them small-scale business opportunities.

It is hard to get a driving license because I need to sit for driving test, which requires reading and writing (Nyamasheke, male, 41 years).

I cannot do tailoring because it requires understanding mathematical measurements.

This gives me hard time (Nyamasheke, female, 19 years).

Similarly, another participant recalled an entrepreneurial opportunity she was unable to embark on due to poor literacy.

Before my dad passed on, he bought me a tailoring machine to help me. In tailoring, you record people's measurements but because I could not write, I sold my machine (Rusizi, female, 42 years).

Some of the participants recounted taking unnecessary risk because of poor literacy and ended up losing money.

My parents told me to attend driving school so that they could buy me a motorbike to start a transport business. I failed because I cannot read or write. Out of desperation, I tried to give 200,000 RWF [US\$230] to someone so they could do the motorbike practical test for me, but they refused (Rusizi, male, 32 years).

Clearly, different levels of literacy skills are required for different types of entrepreneurial activities. Small-scale entrepreneurial activities, such as driving and tailoring, are a means to escaping poverty and improving one's quality of life. The focus on entrepreneurial activities is also a reflection of the limited formal employment in Rwanda.

Farming practices

As noted in our survey, 24% of the population in the western province of Rwanda were landless and 60% owned plots considered too small to sustain a household by Food and Agricultural Organisation. Most of the participants livelihoods revolved around semi-subsistence agricultural activities. For those participants who had limited land (coupled with

poor literacy), our findings indicate that they were applying less productive farming practices which were affecting their crop yield.

I see people in our village growing bananas. They grow these bananas using better seeds. They harvest more than us and they have access to the market for their produce. Being illiterate is the worst thing (Rubengera, male, 31 years).

Illiterate people can practice farming by mixing many crops such as, maize, cassava, banana...but the literate people know which techniques to use without mixing those crops and know how to space crops (Rusizi, male).

The participants appeared to suggest that other farmers use improved seeds which they could not afford. This means that they produce a smaller and poorer quality crop. Although the participants only referred to improved seeds, poor farmers cannot afford chemical fertilizers and sprays. The farmers' inability to purchase seeds or chemical fertilizers is an indication of an inability to generate income.

4.2.2 Familial quality of life

Participants with poor literacy felt they were not able to fulfil certain functions at a personal level within their households. This has the potential to undermine quality of life.

Support with children's education

Some of the respondents noted that they were unable to support their children with their schoolwork due to limited literacy. Poor literacy in this regard was seen as affecting the capabilities associated with parenting and wanting to help children with education, which is itself viewed as means of expanding freedoms (Sen 1999).

Whenever my child brings homework from school, I ask him what they taught them that day, but I will not help him much because I have no idea where to start. So, I just tell him to do it (Rubavu, female, 30 years).

When my children come back from school, they ask me to help them do their homework, but I can't help because I don't know it (Ngororero, female, 34 years).

An inability to support children in their education contributes to further disadvantage by condemning the children to poor educational outcomes. This can affect the children's own ability to expand the freedoms and carve out their own pathway to their preferred quality of life when they grow up.

Another participant had the following to say about how poor literacy undermined her ability to provide academic support to their children.

The teachers invite us to parents' meetings at school. They advise us to help children in their schoolwork. However, because I cannot read and write, there is no way to help. Instead, I become harsh on them (female, 46 years).

The sense of helplessness leading to a negative reaction by some parents signify personal unhappiness and limited capabilities.

Health and well-being

Health-related literacy relates to an ability to 'develop appropriate knowledge and competence to understand, appraise, and apply relevant health information and make appropriate judgments and decisions concerning disease prevention and healthcare to maintain or improve quality of life' (Zheng et al. 2018, 1 – 2). In our study, health-related literacy was largely associated with inability to follow prescription advice.

When a doctor prescribes you medicine, they will write a note on the appropriate dosage. Sometimes, we lack confidence to ask for help from others about the correct dosage written on the note and end up giving incorrect dosage. If God wishes, the patient will recover (P6).

When my child is sick, I use herbal medicine (local medicine) or use any other medicine without a doctor's prescription. At times, I even use expired medicine, belong to another person who was sick before, even if the illness is different...
(Rusizi, male).

Participants also noted risking their own lives by not following the right dosage of medicine when they were unwell.

Doctors prescribe you medicine with instructions, but due to illiteracy, you just take anyhow. At times, you carelessly take more than the prescribed dosage, based on how much pain you are feeling (Rubavu, female 35 years).

Health illiteracy suggests that such individuals were prone to undermining their own health or that of their children. This has the potential to negatively affect the health quality of life of the participants and their children.

4.2.3 Intrapersonal and interpersonal quality of life

Our findings on intrapersonal aspects related to low self-esteem while interpersonal aspects related to limited independence and an inability to take on leadership roles by participants.

Low self-esteem and confidence

At an intrapersonal level, there was also a feeling of low self-esteem and confidence for those who could not read. There was also a sense of stigma resulting from an inability to read or write.

I have inferiority complex because I do not know how to read and write
(Nyamasheke, male, 28 years).

We don't have self-confidence...I went to the district offices for land sales to sign a document and I had to use a thumbprint (Rubengera, female, 35 years).

The experiences identified exemplify limited capabilities, which affected individuals' sense of self-confidence and self-esteem. Both intrapersonal and interpersonal aspects lead to a decreased sense of self-worth and undermine quality of life.

Limited independence

Participants with poor literacy noted that they were constrained in some ways and had to rely on other people for help with reading and writing.

Whenever I receive mail, I try to read it, but I do not get everything in it. So, I seek help from someone who knows how to read well (Nyamasheke, male, 38 years).

At the Rwanda and the Democratic Republic of Congo border post, there is a form to fill, if crossing the border. So, when I get there, I wait for almost 40 minutes for someone to come and fill that immigration form for me because I cannot do it by myself (Rubavu, male, 34 years).

In addition, some of the participants indicated that they needed help with travel directions as they were unable to read signposts independently.

When I go to the hospital, I ask people to read for me to know the exact department I want to go to, either for consultation, pharmacy, or laboratory (P2).

I cannot read signposts for my directions when I am in Kigali (female, 46 years).

These findings suggest limited independence among people with poor literacy. While the individuals had coping strategies, they could not still be deemed to exercise individual agency and capabilities.

Inability to take on community leadership roles

The findings relating to interpersonal issues indicate that participants with poor literacy were unable to take certain leadership roles within their communities.

I was working as a tea picker at a tea plantation where they wanted a team leader. I was chosen for the role. However, when they found out that I am illiterate, they immediately chose another person (Rubavu female, 26 years).

They selected me to represent women in our Cell. They removed me because I could not read and write (Rubavu, female, 56 years).

Our local leaders came to my house and wanted to nominate me as a community health worker (CHW). However, because I was unable to read or write, I could not take on the role (Rubengera, female, 40 years).

An inability to read, write and count meant that one could not take on community leadership roles. This was humiliating and affected individuals' self-esteem.

Not being able to read and write hurts me a lot. They elected me to represent people at a local village level, but I could not do it because I cannot read or write. If I know about an adult literacy training centre, I will join (Rusizi, R4).

Evidently, one's ability to read and write is used as a necessary requirement when identifying those to lead and represent their communities. For example, in Rwanda community health workers must have completed primary school education and are thereafter trained in preventive health and simple medical tasks. Similarly, village leaders are expected to write reports and keep records of *Imihigo*⁵ targets and read messages from the governments.

4.2.4 Desire for adult literacy classes among respondents

⁵ *Imihigo* is a public service performance contract. The concept originates from Rwanda's traditional systems of accountability whereby communities agree goals and targets to be achieved within a given period.

Our findings showed that the demand for literacy classes in the western province was high. In the survey we conducted, 71% of those who could not read and write a simple passage easily and perform numerical calculations stated that they would like to attend an adult literacy education class in the future. Some of the reasons given for wanting to attend adult education literacy among our participants included,

I want to be able to read the Bible. It hurts when I going to church, yet I cannot read the Bible (Rubengera, female 40 years).

Knowing how to read and write will help me to write a letter, fill in documents in the bank or cooperatives without seeking any support. It will help me to get a job (Nyamasheke, male, 29 years).

Evidently, the participants were aware of how their circumstances were related to poor or low literacy capabilities and were willing to address this. They hoped that this would enhance their capabilities, thereby improving their quality of life in various ways.

5. Discussion

In this study we investigated the relationship between literacy and subjective quality of life of individuals in western province of Rwanda. We also explored the experiences and perceptions of individuals with poor or low literacy in connection with the subjective quality of their life.

The quantitative results of this study indicate that literacy has a direct and indirect path to explaining subjective quality of life. The indirect path is through its contribution to wealth (being better off). However, quality of life is not only associated with income wealth (Sen 1999). The independent contribution of literacy is because it enables people to have more control over their lives and it opens choices (Abbott and Wallace 2012; Ngamaba 2016). The quantitative analysis in this study also shows the importance of seeing literacy as a continuum, from no literacy to fully literate. These different levels of literacy skills

influence subjective quality of life differently. For instance, not having sufficient literacy skills in Rwanda is linked with limited economic, familial, and intra/interpersonal capabilities.

The qualitative findings of this study also provide further insights into the subjective quality of life of individuals. With regards to economic quality of life, the findings indicate that an inability to read or write hinder individuals' opportunities to earn an income through gaining reasonable work or creating their own entrepreneurial activities. As a result of poor income, such individuals rely on cheap and often unproductive seeds for their limited farmland. They also rely on less productive farming practices on their farmlands.

At a familial level, the findings show the effects of poor literacy on household members, especially school-going children. The findings also suggest that poor literacy undermines the health of parents and that of their children through poor health knowledge, skills, and behaviour. For example, the findings indicate that some of the adults in the study had difficulties following guidelines on prescription when they or a member of their family was unwell. Other studies have also indicated that low literacy is “associated with poor health outcomes including poor health status and increased mortality” (Zheng et al. 2018, n. p.).

At an intrapersonal and interpersonal level, the findings suggest that adults with poor literacy were hindered from serving their communities in leadership roles and this generated a low sense of self-worth for the individuals. In 2016/7, 60% of the population in western Rwanda had not completed primary school. This meant that many people had not acquired basic literacy to be eligible to take up community leadership roles. This inability to assume community leadership roles also affect their self-esteem and formation of other positive social relationships (Edgerton, Roberts and von Below 2016). The findings relating to interpersonal quality of life also point to limited independence as individuals had to depend on other people to read and write for them. It could be argued that the affected individuals

were yet to develop capabilities to live the life they desired (Sen 1999). Our findings show that intrapersonal and interpersonal elements interact to generate low self-esteem, poor self-efficacy, and lack of confidence and this affects one's personal happiness (Helliwell et al. 2020).

Regarding the motivation for participating in adult literacy education, the findings suggest that individuals were interested in adult literacy education for primarily utilitarian reasons (Dehmel 2006). Another study also found that adult learners were eager and motivated to participate in literacy education which are relevant to their livelihoods and likely to help them address their day-to-day problems (Mengistie 2022). The participants in this study wanted to enhance their literacy capabilities for a better quality of life.

6. Conclusion

This study has revealed that there is a relationship between literacy and subjective quality of life of people in western province of Rwanda. Our study has found that poor or illiteracy in western Rwanda has a direct and indirect impact on quality of life. The findings suggest that poor literacy skills can hinder people from living a way of life that they value (Sen 1999).

From a Rwandan national development perspective, illiteracy has been identified as a hindrance to human progress (MINEDUC 2014). These findings are likely to have resonance across Rwanda and other similar contexts in LMICs. Literacy is important for enhancing people's subjective quality of life (UNESCO 2015). As such, well-designed and appropriately resourced adult literacy education programmes have the potential of alleviating some of the reported experiences and dissatisfaction with subjective quality of life in the western province of Rwanda and other similar contexts.

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