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Educational inequalities and self-reported health among men and women aged 18–49 years in Yangon Region, Myanmar: analysis of a population-based, cross-sectional study

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ABSTRACT

Objectives To estimate the prevalence of good self-reported health (SRH) in subpopulations based on the social determinants of health and to investigate the association between education (measured in years of schooling) and good SRH among men and women aged 18–49 years in Yangon Region, Myanmar.

Design Analysis of data from a population-based, cross-sectional study conducted in Yangon, Myanmar, from October to November 2016. A multistage sampling procedure was employed, and structured face-to-face interviews were conducted with standardised questions adapted from the Myanmar Demographic and Health Survey. Prevalence ratios (PRs) with 95% CIs were estimated using Poisson regression analyses by sex.

Setting Urban and rural areas of Yangon Region, Myanmar.

Participants The sample included 2,506 participants (91.8% response rate) aged 18–49 years and excluded nuns, monks, soldiers, institutionalised people and individuals deemed too ill physically and/or mentally to participate.

Results The prevalence of good SRH was 61.2% (95% CI 59.3 to 63.1), with higher rates among men (72.0%, 95% CI 69.3 to 74.5), younger individuals (69.2%, 95% CI 66.2 to 72.1), urban residents (63.6%, 95% CI 60.8 to 66.3), extended family dwellers (66.6%, 95% CI 63.7 to 69.4) and those with a higher level of education (66.0%, 95% CI 61.3 to 70.5). After adjusting for confounders (age and area of residence), the association between years of schooling and SRH (PR) was 1.01 (95% CI 1.01 to 1.02, p=0.002) in men and 1.01 (95% CI 0.99 to 1.02, p=0.415) in women.

Conclusions Good SRH was more prevalent among men than among women. Additionally, a 1-year increase in education was associated with a 1% increase in the prevalence of good SRH among men, whereas the association was not statistically significant among women. In order to enhance the educational benefits of health in Myanmar, we recommend a higher focus on the length of education and addressing gender inequalities in wage return from education.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ Well-established independent and dependent variables and a transparent presentation of a conceptual framework using a directed acyclic graph strengthen internal validity.
⇒ A high response rate makes the findings generalisable to the sampled population.
⇒ Caution should be taken with the assumption that years of schooling influence self-reported health, given the cross-sectional design of the study.
⇒ Since nuns, monks and soldiers were excluded from the sample, and participants were recruited only from one region of Myanmar, caution should be exercised when attempting to generalise the findings to the entire population of Myanmar.

INTRODUCTION

Health status in Myanmar

Myanmar, classified as a low-income and middle-income country, experiences a significant burden of disease compared with high-income countries.[1] According to the Global Burden of Disease study in 2017, Myanmar's healthy life expectancy (HALE) at birth was 59.9 years (57.3–62.3), in contrast to the higher HALE in high-income countries such as the UK and Norway, with figures of 69.3 years (66–72.1) and 70.2 years (66.8–73.2), respectively.[1] Moreover, Myanmar has undergone an epidemiological transition, shifting from a substantial decrease in the burden of communicable diseases to a rapid increase in non-communicable diseases (NCDs), resulting in a complex double burden of disease.[2] In 2007, the top 5 causes of disability-adjusted life-years in Myanmar for both sexes and all ages were tuberculosis, neonatal conditions, stroke, lower respiratory infections and diarrhoeal diseases, ranked accordingly.[3]

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However, by 2017, the order shifted to neonatal conditions, stroke, tuberculosis, lower respiratory infections and ischaemic heart disease.[3] Multiple factors pose challenges to addressing Myanmar's considerable disease burden. These include a fragile healthcare system due to decades of underinvestment in healthcare, disproportionate allocation of healthcare resources (including finance, infrastructure and human resources), challenges within the primary healthcare system stemming from its traditional focus on communicable diseases, high user fees and direct out-of-pocket payments due to the absence of a reliable health insurance system and cost-sharing policies, and language barriers arising from the nation's diversity with 135 ethnicities speaking over 100 languages and dialects.[2 4]

Self-reported health

One of the goals of the 2030 Sustainable Development Agenda, embraced by every member of the United Nations in 2015, is to ensure healthy lives and promote well-being for all at all ages, as outlined in Goal 3.[5] Achieving this goal begins with understanding the current situation, and self-reported health (SRH) data can provide that essential information. Because SRH is a widely used indicator reflecting an individual's physical and mental health,[6 7] as well as a strong predictor of morbidity and mortality.[8–10] Though the specific wording and response choices differ in self-rated health questions, a widely employed approach is to ask individuals to assess their health status using a single question on a 4-point or 5-point scale, ranging from very good to poor, or very good to very bad.[11 12] These responses are influenced by health behaviour, physical ability or performance, and current illnesses.[13] Despite its subjectivity, SRH has proven to be reliable[14] and valid.[15 16] Additionally, owing to the ease, speed and cost-effectiveness of gathering SRH data, these measures can be valuable in national surveys of low-income countries to rapidly identify high-risk groups for disease prevention and early intervention.[17]

While population-based studies have estimated the prevalence of SRH in many countries, research on SRH among adult citizens in Myanmar is limited. A study conducted in 2002, encompassing 69 countries, reported that 2.9% of individuals in Myanmar reported bad or very bad health.[18] But, these data are outdated and insufficient to assess the current health status of Myanmar's adults. Since then, several population-based studies have been carried out regarding SRH in Myanmar. However, these studies have primarily focused on specific aspects, such as self-rated oral health status,[19] or targeted specific populations, including the elderly[20] and migrants.[21] There have been no recent population-based studies in Myanmar examining the prevalence of SRH among adult citizens.

Social determinants of health

When assessing the prevalence of SRH, considering it from the perspective of social determinants of health can provide valuable insights due to their significant influence on individuals' health outcomes at every stage of life.[22] These social determinants of health encompass factors like education, economic stability, food, neighbourhood and physical environment, community and social context, and the healthcare system.[23] Among these determinants, socioeconomic status is a crucial and commonly used indicator to investigate health inequalities, referring to an individual's position within a structured social hierarchy.[24] Education, one of the socioeconomic factors, emerges as a key integrated marker as it influences both occupation and income.[25]

A positive relationship between education and health has been reported by numerous studies.[26–28] This association is explained through several mechanisms. Ross and Wu proposed three potential mechanisms, which are frequently mentioned as major mediators: work and economic conditions, healthy lifestyle and social–psychological resources.[25] For example, a higher level of education is related to a higher employment rate[29] and increased income.[30] It is also linked to healthier behaviours, such as reduced smoking, lower alcohol consumption and increased physical activity.[31] Additionally, higher education levels contribute to an increased sense of personal control[32] and higher levels of social support.[33] All of these factors collectively contribute to improved health outcomes.[34–38] Understanding the intricate interplay of education and its impacts on health remains a complex and multifaceted endeavour.

Gender gap in educational inequalities on health

Gender differences in health are firmly established. While men face higher mortality rates[39] and are at greater risk of life-threatening illnesses compared with women,[1] they tend to rate their health more positively.[40–42] Conversely, women are more prone to non-fatal illnesses,[1] as well as minor chronic conditions and acute conditions,[43] and they typically report poorer health than men.[40–42] In Myanmar, mortality trends align with these gender differences,[44] yet recent information on morbidity and SRH by gender is lacking.

Though the precise reasons for women's lower SRH are not fully understood, suggested factors contributing to the gender gap in SRH from previous studies include biological distinctions between the sexes, differences in male and female psychology (such as risk perception, illness definition and coping strategies), variations in how genders tend to report their health (under-reporting or over-reporting) and societal gender inequalities.[40 45]

Additionally, education is widely acknowledged as a factor that can lead to improved health outcomes for both women and men. However, the extent of gender disparities in the relationship between education and health may differ by gender. Recent review studies indicate that women may experience fewer or no mortality benefits from education compared with men.[46 47] While research concerning morbidity is limited, a study from the USA indicates that as educational levels rise, women tend to experience a lower burden of physical

impairment compared with men.[48] Moreover, the consistency of gender differences in the benefits of education on SRH varies across different studies.[49–51] In Myanmar, as far as we are aware, there is one study that has researched this issue, indicating a significant negative association between years of schooling and mental distress among women and men aged more than 30 years, but not among the younger men.[52] For comparison of gender differences in the benefits of education on morbidity and SRH in Myanmar, more studies are warranted.

Aims

In this study, we aimed to estimate the prevalence of good SRH in subpopulations based on the social determinants of health (sex, area of residence, family type, education, occupation and income) and to investigate the association between education (measured in years of schooling) and good SRH among men and women in the Yangon Region of Myanmar.

METHODS

Study design and setting

The present manuscript reports an analysis of data from a population-based, cross-sectional study among men and women aged 18–49 years in the northern and southern districts of the Yangon Region of Myanmar, conducted in October and November 2016.[52–54] Data were collected in the Yangon Region, the most developed and densely populated region in Myanmar, and included all ethnic groups residing there. However, it excluded nuns, monks, soldiers, institutionalised people and those deemed too ill physically and/or mentally to participate. Domestic violence was the motivation for conducting the original study.[53] Therefore, the sample size was determined based on the overall aims of the previous study, which was to estimate the prevalence of domestic violence among married women (21%), as reported by the Myanmar Demographic and Health Survey (DHS, 2015–2016).[55] A sample size of 2400 persons was estimated, based on a prevalence of 21%, a power of 80%, a significance level of 0.05 and allowing for a 20% non-response rate, as well as enabling sub-group analyses by sex.[53]

A multistage sampling procedure was used. Two out of the four districts in the Yangon Region, namely the north and south districts, were selected based on the 2014 Myanmar Population and Housing Census.[56] These districts were chosen because they comprise both urban and rural areas, whereas the east and west districts consist solely of urban areas. Subsequently, urban wards and rural villages were listed from these two selected districts. In the northern district, there were 125 wards (urban subunits of a township) and 235 villages (rural subunits of a township), while the southern district had 110 wards and 375 villages. Eight wards and eight villages were then randomly chosen from each of the two districts, resulting in a total of 16 wards and 16 villages being selected. From these, 2,731 households were sampled proportionally to

the total population sizes in the north and south districts of the Yangon Region and in proportion to the urban and rural population sizes within these two districts. Lists of households were obtained from local authorities.[56] One person in each household was asked to make a list of family members aged 18–49 years. Based on this list, one of the family members was randomly asked to participate in the study through a sealed envelope method.[57] From every second household, a woman or a man was randomly selected. Out of the 2,731 sampled households, we couldn't get in touch with 89 households. Among the remaining 2,642 households, a total of 130 invitees declined to participate. Additionally, six individuals had missing data on one of the variables used in the regression analysis. Consequently, the final sample used for analysis consisted of 2,506 individuals, comprising 1,135 men and 1,371 women, resulting in a response rate of 91.8%. Given the high response rate and the representativeness of the respondents for men and women aged 18–49 years in the northern and southern districts of the Yangon Region, the data were deemed suitable for investigating the objectives of this study.

Data collection and measurement

Data were collected through structured interviews, using standard questions adapted from the Myanmar DHS (2015–2016).[55] These questions had previously been translated into Burmese, the most commonly spoken language in Myanmar, and then back-translated into English by a professional translator. A pilot survey was conducted on 1 and 2 October 2016 in 54 households within a single ward (Dagon Seikkan township, which was not included in the main survey area). The purpose of this pilot survey was to assess the clarity, cultural acceptability and understanding of the questions. The interviews were conducted face-to-face using questionnaires (online supplemental appendix 1, pp1–3). (Three different questionnaires were used in the project: married women, unmarried women and men questionnaires. All three questionnaires included the same questions, which were used in the present analyses. In the appendix, we have included the English-translated original questionnaire for married women to present the relevant questions and variables.) Before the interviews, all participants were informed about the study's purpose, potential risks and benefits of participation. After obtaining informed written consent from the interviewee, the interview proceeded. We ensured privacy, anonymity and confidentiality for all participants. Participants had the right to refuse to answer any questions or decline participation, and they could withdraw from the study at any time without facing any consequences.

Directed acyclic graph (DAG): conceptual framework

We drew a DAG[58] to identify confounders, mediators and colliders as part of our strategy for the Poisson regression analyses examining the association between years of schooling and good SRH (figure 1). Drawing from prior evidence, the present research framework postulates that
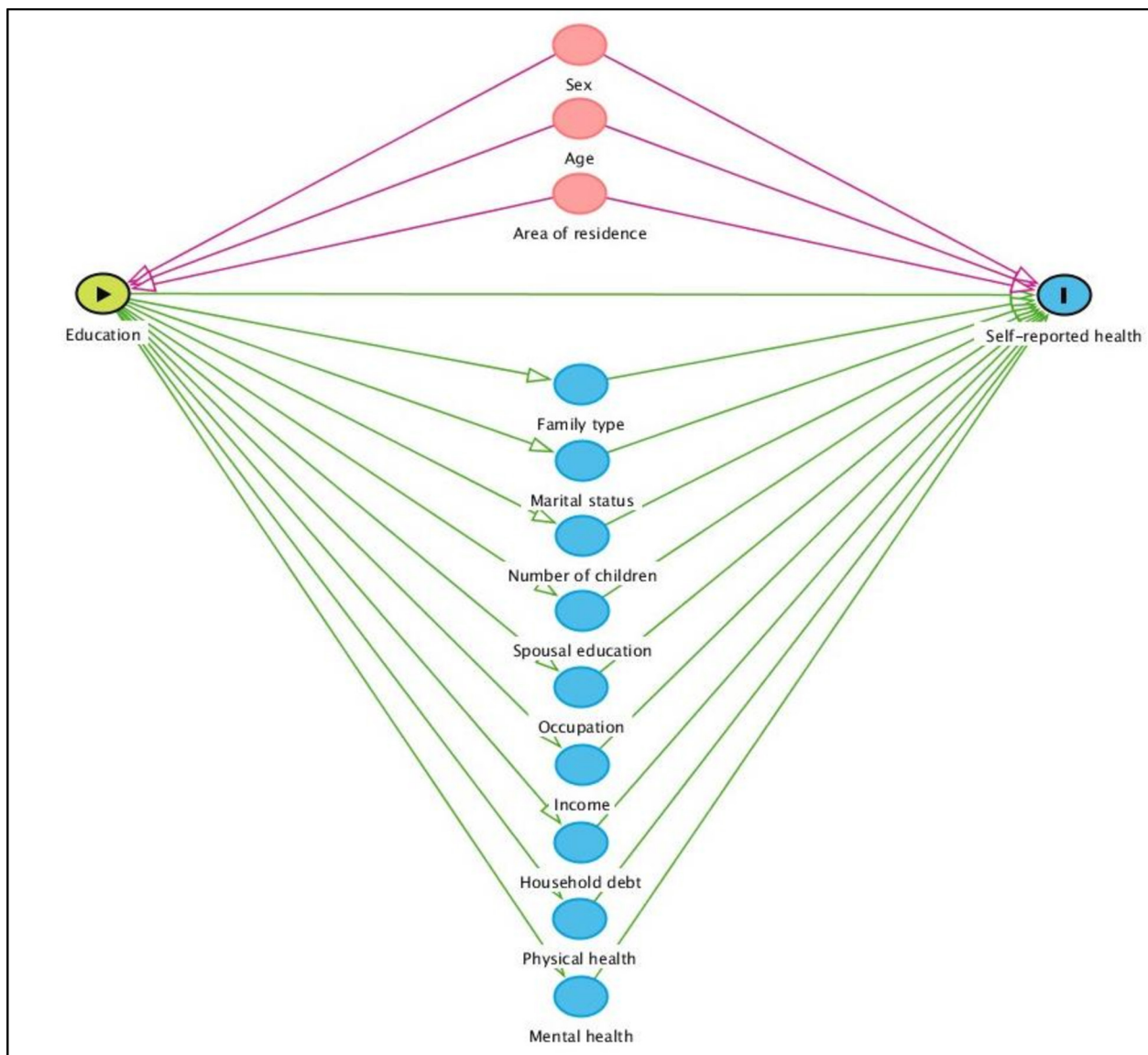
Figure 1 Directed acyclic graph for the association between years of schooling and self-reported health.

sex, age and area of residence are confounders because each of these factors influences both education and SRH.[45 59–62] In Myanmar, according to 2016 UNESCO statistics, girls show a slightly higher completion rate in primary, lower and upper secondary school compared with boys.[59] Additionally, urban areas exhibit significantly higher completion rates across these educational levels based on the same statistics.[59] Due to the limited data available for Myanmar, when examining results from other countries, it's observed that men and urban residents tend to report better health outcomes compared with women and rural area residents.[45 60–62] Furthermore, we considered three categories of variables that mediate a connection between education and SRH: work and economic factors (spousal education, occupation, income, household debt)[29 30 34 35]; social–psychological factors (family type, marital status, number of children, mental health)[32 33 38] and physical health.[7 26–28] After

controlling for confounding variables, we assumed a weakened association.

Study variables

Self-reported health

SRH status was used as the outcome and was measured by the question: 'In general, how would you characterise your current health?' with four response choices: 'Poor;, 'Not very good', 'Good' and 'Very good'. The responses were dichotomised into two groups: 'Poor SRH' (poor, not very good) and 'Good SRH' (good, very good).

Education

Education was used as the exposure and was measured with the question, 'How many years of schooling/education?' For bivariate analyses, the number of years of schooling reported by respondents was categorised into three groups: 0–5 years (primary school), 6–11 years (secondary school: middle and high schools) and >11

years (tertiary education: university). This categorisation was based on Myanmar's 5-4-2 education system, which continued until the 2015/2016 academic years.[63] In Poisson regression analyses, the education variable (years of schooling) was treated as a continuous variable.

Other variables

Age was categorised into three age groups for bivariate analyses (18–29, 30–39 and 40–49 years old), while it was treated as a continuous variable in Poisson regression analyses. The area of residence was classified as 'Urban' and 'Rural'. According to the General Administration Department of the Ministry of Home Affairs in Myanmar, 'Wards' are considered urban areas, while 'Village Tracts' are considered rural areas in Myanmar.[56] Family type was classified as 'Nuclear' and 'Extended'. Occupational status was categorised into four groups: 'Dependent/student/housewife', 'Unskilled worker', 'Government staff/non-government staff' and 'Small business owner'. For household income, the total monthly household income was divided by the number of household members regardless of age, resulting in a per capita monthly income. Monthly income was divided by 30.4 (the average number of days in 1 month) and the Myanmar exchange rate on 4 November 2018. Daily individual income was categorised into three groups based on the World Bank's poverty lines cut-offs of US$1.90/day and US$3.10/day: low (≤US$1.90/day), medium (between US$1.90/day and US$3.10/day) and high (≥US$3.10/day).[64]

Statistical methods

Data management and statistical analyses were conducted using STATA/IC V.16.0. For descriptive analyses, we estimated the prevalence of good SRH among men and women in the Yangon Region of Myanmar by characteristics such as sex, age, area of residence, family type, education, occupation and income, along with 95% CIs. We computed the 95% CI to present the uncertainty of these estimates. Analyses were stratified by sex.

Since our aim was to estimate the total effect of education on good SRH, we adjusted for confounders but not mediators. We opted for calculating prevalence ratios (PRs) with 95% CIs using Poisson regression instead of ORs with logistic regression. This choice was made because when the outcome is common (ie, prevalence >10%), ORs can potentially overstate the association.[65 66]

We examined interactions between the exposure and confounders and identified an interaction between years

of schooling and sex. However, we did not observe any other significant interactions in other variables. Consequently, we conducted separate analyses only by sex.

For each sex, we analysed two models. Model 1 was the crude model, while Model 2 was adjusted for confounders (age and area of residence). We assessed the assumptions of the Poisson model, including linearity and homoscedasticity (constant error variance), by plotting residuals versus predicted values. We confirmed that the observations were independent of each other, as only one person from each household was included in the sample.

Patient and public involvement

None.

RESULTS

Descriptive Statistics

The sample comprised 2,506 participants, including 1,135 men and 1,371 women. Women accounted for a higher proportion (54.7%) than men (45.3%). The mean age of participants was 33.1 years (SD=9.1), while the mean years of schooling were 7.7 years (SD=4.0). Men had more years of education (8.0 years) than women (7.6 years).

Table 1 displays the prevalence of the four categories of SRH. It shows that the prevalence of 'very good' SRH was similar among men (12.4%) and women (11.2%). However, a higher prevalence of 'poor' SRH was observed in women compared with men (35.4%, 95% CI 32.9 to 37.9 vs 20.7%, 95% CI 18.4 to 23.2).

As shown in table 2, when dichotomising SRH as 'good' (very good and good) and 'poor' (not so good and poor), the overall prevalence of good SRH was 61.2% (95% CI 59.3 to 63.1). Notably, a higher proportion of men (72.0%, 95% CI 69.3 to 74.5) reported good SRH compared with women (52.3%, 95% CI 49.6 to 54.9). Variations in the prevalence of good SRH were observed across different age groups, decreasing from 69.2% in the youngest age group (18–29 years) to 49.0% in the oldest age group (40–49 years). This disparity was consistently evident among men but not among women. Residents in urban areas reported a higher prevalence of good SRH compared with rural areas: 63.6% (95% CI 60.8 to 66.3) versus 59.2% (95% CI 56.5 to 61.8). This difference was consistently observed among women but not among men. Regarding the family type, individuals living with extended families reported good SRH more frequently

Table 1 Prevalence of the four categories of self-reported health among men and women in the Yangon Region of Myanmar

	Men (N=1135)			Women (N=1371)			All (N=2506)		
	N	Prevalence (%)	95% CI	N	Prevalence (%)	95% CI	N	Prevalence (%)	95% CI
Very good	141	12.4	10.6 to 14.5	153	11.2	9.6 to 12.9	294	11.7	10.5 to 13.1
Good	676	59.6	56.7 to 62.4	564	41.1	38.6 to 43.8	1,240	49.5	47.5 to 51.4
Not so good	83	7.3	5.9 to 9.0	169	12.3	10.7 to 14.2	252	10.1	8.9 to 11.3
Poor	235	20.7	18.4 to 23.2	485	35.4	32.9 to 37.9	720	28.7	27.0 to 30.5

Table 2 Prevalence of good self-reported health by characteristics among men and women in the Yangon Region of Myanmar

Characteristics	Men (N=1135)			Women (N=1371)			All (N=2506)		
	N	Prevalence (%)	95% CI	N	Prevalence (%)	95% CI	N	Prevalence (%)	95% CI
Full sample	1,135	72.0	69.3 to 74.5	1,371	52.3	49.6 to 54.9	2,506	61.2	59.3 to 63.1
Age group									
18–29 years old	423	82.5	78.6 to 85.8	529	58.6	54.3 to 62.7	952	69.2	66.2 to 72.1
30–39 years old	385	71.4	66.7 to 75.7	451	55.0	50.4 to 59.5	836	62.6	59.2 to 65.8
40–49 years old	327	59.0	53.6 to 64.2	391	40.7	35.9 to 45.6	718	49.0	45.4 to 52.7
Area of residence									
Urban	547	71.7	67.7 to 75.3	604	56.3	52.3 to 60.2	1,151	63.6	60.8 to 66.3
Rural	588	72.3	68.5 to 75.8	767	49.2	45.6 to 52.7	1,355	59.2	56.5 to 61.8
Family type									
Nuclear	624	66.8	63.0 to 70.4	1,011	50.6	47.2 to 53.9	1,476	57.5	54.9 to 60.0
Extended	511	78.3	74.5 to 81.6	640	55.1	50.8 to 59.3	1,030	66.6	63.7 to 69.4
Education level*									
<6 years	381	66.4	61.5 to 71.0	547	49.2	45.0 to 53.4	928	56.3	53.0 to 59.4
6–11 years	568	74.3	70.5 to 77.7	604	53.3	49.3 to 57.3	1,172	63.5	60.7 to 66.2
>11 years	186	76.3	69.7 to 81.9	220	57.3	50.6 to 63.7	406	66.0	61.3 to 70.5
Occupation†									
Dependent/student/housewife	56	82.1	69.9 to 90.1	637	54.6	50.7 to 58.5	693	56.9	53.1 to 60.5
Unskilled worker	496	71.6	67.4 to 75.4	152	43.4	35.8 to 51.4	648	65.0	61.2 to 68.5
Government/non-government staff	166	78.3	71.4 to 83.9	132	54.6	46.0 to 62.8	298	67.8	62.3 to 72.8
Small business owner	417	68.6	64.0 to 72.9	450	51.3	46.7 to 55.9	867	59.6	56.3 to 62.9
Daily household Income level (US$)‡									
≤1.90	715	71.3	67.9 to 74.5	692	52.2	48.4 to 55.9	1,407	61.9	59.3 to 64.4
1.91–3.10	272	71.3	65.7 to 76.4	389	50.1	45.2 to 55.1	661	58.9	55.1 to 62.5
≥3.11	146	76.0	68.4 to 82.3	283	55.5	49.6 to 61.2	429	62.5	57.8 to 66.9

*Education level: <6 years (primary education); 6–11 years (secondary education: middle and high schools); >11 years (tertiary education: university).
†Occupation: Dependent (students, housewives and unable to work); Unskilled workers (odds job); Government and non-government staff (getting monthly salary).
‡Exchange rate: US$1=1363 Myanmar Kyats as of 4 November 2018.

Table 3 Association between years of schooling and good self-reported health among men and women in the Yangon Region of Myanmar (Poisson regression analysis)

Outcome	Unadjusted PR (95% CI)	Adjusted* PR (95% CI)
Men		
Poor	1	1
Good	1.02 (1.01 to 1.03)	1.01 (1.01 to 1.02)
P value	<0.001	0.002
Women		
Poor	1	1
Good	1.01 (1.00 to 1.03)	1.01 (0.99 to 1.02)
P value	0.023	0.415

*PRs adjusted for confounders (age and area of residence).
PR, prevalence ratio.

(66.6%, 95% CI 63.7 to 69.4) than those living with nuclear families (57.5%, 95% CI 54.9 to 60.0). However, this difference was found among men but not among women. Participants with less than 6 years of education had a lower prevalence of good SRH (56.3%, 95% CI 53.0 to 59.4) than those with higher educational levels (63.5%, 95% CI 60.7 to 66.2 and 66.0%, 95% CI 61.3 to 70.5). This difference was consistently found among men but not among women. Lastly, there was no difference in the prevalence of good SRH among different daily household income levels in the general population and for both sexes.

Association between years of schooling and good SRH

In separate Poisson regression analyses among men and women, adjusted for confounders (age and area of residence), the association (PR) between years of schooling and good SRH was statistically significant among men (PR=1.01, 95% CI 1.01 to 1.02, p=0.002), but not among women (PR=1.01, 95% CI 0.99 to 1.02, p=0.415) (table 3). The findings indicate that a 1-year increase in education is associated with a 1% increase in the prevalence of good SRH among men.

DISCUSSION

In this population-based cross-sectional study conducted among men and women aged 18–49 years in the northern and southern districts of the Yangon Region of Myanmar, we found that the prevalence of good SRH was 61.2%. The study showed a high prevalence of good SRH in various subgroups associated with demographic and social determinants of health. These factors included being male, belonging to a younger age group, residing in urban areas, living with extended family and having a higher level of education. After adjusting for confounders (age and area of residence), we found an association between years of schooling and good SRH among men, but not among women.

The prevalence of good SRH in our study was found to be 61.2%. For comparison, other studies have identified a higher prevalence in Bangladesh (84.5%, a lower-middle-income country)[67] and Denmark (83.7%, a high-income country).[68] However, while within-country comparisons of SRH prevalence may be valid, making comparisons among countries may not be valid due to differences in sample sizes, age groups and response classification. For example, the cross-sectional study from Bangladesh used a 4-point scale, ranging from 'very good' to 'very bad' (ie, very good, good, bad and very bad) and combined 'very good' and 'good' as 'good health' among 908 randomly selected adults aged 18 years and above in 2017.[67] In a large national population-based survey conducted in Denmark in 2016–2017, a 4-point scale ranging from 'very good' to 'very bad' (ie, very good, good, poor and very poor) was employed.[68] We grouped 'very good' and 'good' as 'good SRH' for comparison with our study.[68] The survey included 15,728 randomly selected adults aged 25 years and above.[68] In addition, differences in responding to survey questions according to the income level of a country and cultural factors could invalidate comparisons of SRH prevalence among countries.[69 70]

When comparing our findings to a previous study conducted in Myanmar as part of the 2002 World Health Survey, our study reported a lower prevalence of 61.2% compared with the 97.1% reported in the earlier study.[18] However, the results of the previous and current studies may not be directly comparable due to differences in the age groups surveyed, the wording of the SRH question and the categories of responses. The previous study included individuals aged 25 years or older, whereas our study focused on individuals aged 18–49 years.[18] Moreover, the wording of the SRH question between the two surveys was different, and it may influence the prevalence of SRH.[71] In the previous study, respondents were asked, 'In general, how would you rate your health today?' In our study, we used the question, 'In general, how would you characterise your current health?' Furthermore, in the previous study, the outcome variable for good SRH included an additional category: 'very good', 'good' or 'moderate' were coded as 'self-rated good health', while in our study, 'very good' and 'good' were grouped as 'good SRH'.[18]

In our study, we found that the prevalence of good SRH among women was lower compared with that among men, consistent with findings from research conducted in various countries.[41 42] Additionally, our study observed that the prevalence of good SRH was higher among individuals residing in urban areas and those living with extended family, aligning with previous research.[61 72]

After adjusting for confounders (age and area of residence), our findings indicated a relatively weak association between years of schooling and good SRH among men, which aligns with the results in France, Italy and Sweden.[73] On the other hand, results in Bosnia and Herzegovina, the USA and Norway showed a relatively strong association.[73]

Few studies have explored why the strength of the associations between years of schooling and SRH varies among

different countries. A study conducted in 49 countries, encompassing all income levels, reported that in more developed countries, health disparities based on education were more pronounced.[74] According to this study, one possible reason for the weak association between education and SRH among men in our study, compared with developed countries, is the phase of the epidemiological transition from communicable diseases to NCDs.[74] In Myanmar, NCDs are escalating at alarming rates and constitute 72% of the collective causes of death across all age groups and genders in the years 2016–2017.[75] Among the risk factors associated with NCDs, obesity accounts for around 40% of all deaths in Myanmar, according to the 2014 report by the International Atomic Energy Agency.[76] What makes matters worse both obesity and overweight are rapidly increasing in Myanmar. Between 2006 and 2016, obesity rates among adults aged 18 years and over in Myanmar increased from 1.9% to 4.0% in men and from 4.3% to 7.3% in women.[77] Additionally, overweight prevalence rose from 14.6% to 21.2% in men and from 21.1% to 27.8% in women.[77] In this context, obesity tends to be more prevalent among individuals with higher levels of educational attainment in Myanmar, potentially hindering the positive effects of education on health.[78]

Another reason for the observed weak association between education and SRH among men in Myanmar, compared with more developed countries, might be the low wage return to education in Myanmar. Myanmar's average return on an additional year of education for the employed population is relatively low (5.1% in Myanmar, compared with the East Asia and Pacific regional average of 9.4%), and the effect of education on labour earnings does not follow a linear pattern across educational levels according to the 2015 national survey.[79] As a result, the educational benefits, such as improved access to healthcare services through increased income, may be diminished.

Our study found an association between years of schooling and good SRH among men, but no such association was observed among women. Our finding regarding gender differences aligns with studies conducted in China and Germany, which reported a reduced influence of education on perceived health in women compared with men.[49 50] In contrast, a different study in China found that women, as compared with men, rely more heavily on education to improve their self-assessed health.[51]

Pinpointing the exact reasons for different trends in association strength among genders in various countries remains challenging due to a lack of research. However, considering the epidemiological transition in Myanmar,[2] the reduced association between education and SRH in women compared with men in our results could be explained by higher obesity rates among women than men.[77] In Myanmar, obesity is more common among women than men among those aged 18 and above.[77] Simultaneously, there is a tendency for obesity to be more prevalent among individuals with higher education levels.[78] While a comprehensive future study is necessary,

inference from previous research suggests that in populations with the same level of education in Myanmar, women are more likely to be obese than men.[77 78 80] If so, the association between education and SRH in women may be weaker than in men, given that obesity is one of the risk factors for NCDs.

Another possible explanation for the different trends in association strength among genders in our study is the gender wage gap. According to data from a 2017 survey, female urban labour workers received an average wage that was around 13% less than their male counterparts, despite having the same level of education and experience and being employed in the same manufacturing enterprises.[81] This wage inequality between men and women may reduce the benefits of education for women compared with men, in terms of increased income for obtaining additional resources to improve health.

This study has several strengths contributing to its internal and external validity. The high response rate of 91.8% reduced the risk of selection bias due to non-responses. We employed internationally recognised and widely used questionnaires, including a modified version of the WHO DHS Myanmar Questionnaire.[55] The questionnaires were already translated into Burmese and then back-translated into English, which helped minimise potential information bias. Another strength is that we used well-established measures and adopted a DAG as our analytical strategy. Using DAGitty, a web-based tool designed for crafting, modifying and analysing causal diagrams, enabled us to proficiently identify potential confounders, colliders and mediators.[58]

There are also several limitations to this study. The exclusion of nuns, monks, soldiers, institutionalised people and those who are physically or mentally too ill to participate from our sample poses a limitation when trying to generalise our findings to the broader population. The potential impact of the inclusion of nuns, monks and soldiers on the prevalence of SRH remains uncertain—whether it might lead to an overestimation or underestimation. Nevertheless, there are indications from reports that these groups may exhibit distinct tendencies when reporting their health compared with the participants in our study.[82 83] Research has pointed out that individuals who identify as religious often tend to report better health due to the health-promoting effects derived from religious identity.[82] Regarding soldiers, they can positively report their health due to the impact on their careers, despite the confidential and non-disclosure of data to their chain of command.[83] So, including nuns, monks and soldiers could have introduced selection bias in this study. However, no individuals were excluded due to sickness in the present study.

The participants in this study were 18–49 years old, excluding adults above 49 years. This choice was made because the original study, which aimed to estimate the association between domestic violence victimisation and mental distress, focused on women of reproductive age.[53] Therefore, the findings can only be generalised

to individuals aged 18–49 years in the Yangon Region, as the association between years of schooling and SRH may differ among those aged 50 and over. Another factor influencing generalisability is the specific region where the study was conducted. Participants were recruited from one region of Myanmar (Yangon Region), the most developed part of the country. For that reason, its population may not be comparable to populations outside the Yangon Region.

Only one person had not completed her studies at the time of data collection, which is unlikely to have introduced bias. However, we cannot rule out the possibility that some of the younger participants might continue their education at a later stage. Another limitation is the absence of data on certain potential confounding factors like genetic factors, family history of illness and parental educational and income levels, which introduces a chance of residual confounding. There is always a potential for information bias because participants may under-report or over-report their poor health, which might have led to a dilution of the association, that is, a weaker association. One final limitation in assessing the association is the uncertainty regarding the direction of the relationship between years of schooling and SRH due to the cross-sectional design of our study. Hence, additional prospective studies are needed to provide more clarity on this relationship.

CONCLUSIONS

We found a higher prevalence of good SRH in men compared with women. Good SRH was more frequently reported among citizens with certain characteristics, including younger age, urban residence, living with extended family and a higher level of education. In multivariable analyses, an association between years of schooling and good SRH was observed among men but not among women. In order to enhance the educational benefits for health in Myanmar, we recommend a higher focus on the length of education and addressing gender equity in wage systems related to education. Conducting new cross-sectional studies to examine potential changes in the prevalence of good SRH is necessary because the ability to attend school and SRH might have been influenced by the unrest following the political and societal changes resulting from the military coup on 1 February 2021.

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