



Evaluating the change in financial status of community members through university employment in rural Rwanda

BY

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Abstract

Employment can enable an individual to earn a living and potentially elevate their material well-being. Globally, women have lower labor force participation and receive less wages compared to men. A new university in Rwanda has intentionally prioritized employing local community members, especially women. This study evaluated the change in their financial status since employment. Information was collected from all contractors who had been employed by the university for more than 6 months. Change in income, saving amounts, poverty levels (inflation-adjusted) since employment were analyzed, subdivided by gender and profession. Our study found that the median income and saving of 138 participants significantly increased ($P < 0.001$). A significant proportion of respondents emerged from poverty, especially among the female respondents ($P = 0.02$), as well as in the overall sample ($P = 0.019$). Men significantly had higher income than women before joining the university ($P = 0.019$) but no difference in income were found between men and women since joining ($P = 0.949$). The change in income was statistically different by the job profession ($p < 0.001$) and positively correlated to the duration of employment ($P = 0.006$). Structured and intentional employment could empower impoverished communities by improving their income and savings, thus helping them emerge from poverty. This change, in our study, was more obvious among female workers. The employment through the university has closed the income gap between men and women contractors, serving as a means in promoting gender equality.

Keywords: employment, economic change, development, financial inclusion, economic empowerment, low- and middle-income country

Abbreviations

CPI - Consumer Price Index

UGHE – University of Global Health Equity

Introduction

Employment is a core part of most adults' productive lives and is a major determinant of quality of life (Bilevičienė et al., 2016). Apart from enabling someone to earn a living and potentially elevating their material well-being, employment also has other non-monetary benefits. The work environment offers opportunities to enhance social connectivity, share experiences, and connect with people outside the family, as well as learn from co-workers (Stiglitz et al., 2009).

Employment can also offer someone social status, ability to contribute to improving their communities and support good mental health wellness (Rahkonen et al., 2006; Neubert et al., 2019; Raphael, 2011; Wilcock A., 2006). This can also impact someone's sense of achievement, purpose, and feeling of belonging (Wilcock A., 2006).

Globally, there was a 25% difference in the labor force participation rate between women (47%) and men (72%), with women engaged in unpaid work three times more than men,



while receiving 20% less wages than men (International Labor Organization, 2022). The University of Global Health Equity (UGHE) is committed to being an excellent environment for workers, including contractors, and positively impacting the Burera community where UGHE's residential campus is located (UGHE, 2017). In addition, UGHE also aims to close the gender gaps in education, research, as well as in employment.

Burera is a rural district located in the northern province of Rwanda. Butaro is the second most populated sector in Burera District with a population of 31,520 residents, 92.4% of whom live in the rural area (NISR, 2012; Kimilu et al., 2020). The community has over eight thousand households, served by 11 primary schools, 7 secondary schools, and 1 vocational training institution, all owned or aided by the government (Kimilu et al., 2020). UGHE is the only university in the sector. Agriculture is Butaro's major economic activity with over 95% of the population relying on subsistence farming, and 83.1% of the population being self-employed (The Republic of Rwanda, 2012). Health infrastructure, access to healthcare, human resources for health (HRH), literacy levels, and hygiene and sanitation practices are some key health concerns in the area (NISR, 2012; Kimilu et al., 2020).

As the only higher institution of learning in the district, UGHE potentially could increase opportunities for the and improve the lives of community members in Butaro. In this regard, UGHE has intentionally prioritized Butaro community members, especially women, when recruiting campus contractors since the opening of the campus in 2019. By 2020, 76% of campus contractors were residents of the surrounding community (UGHE 2020), and the target is to increase this number 80% in the coming years.

However, the economic and social impact of working for UGHE for people employed as contractors has not been evaluated. It is unclear if the employment provided by UGHE has enhanced the contractors' financial well-being. The objective of this study was to evaluate the change in the financial status of UGHE contractors. Understanding these aspects of their employment would provide data for making evidence-based plans on improving the living standards and work environment of the campus service providers and UGHE's surrounding community.

Methods

Setting

Founded in 2015, UGHE is a higher education institute fully accredited in Rwanda and East Africa. The main campus is in Burera, a rural district of Rwanda's northern province, and was inaugurated on January 25th, 2019. As part of the mission to develop the neighborhood community, UGHE intentionally employs workers from Burera as contractors and casual workers (day laborers). As of January 2022, UGHE had outsourced four services to four different local companies, including kitchen, security, cleaning, and maintenance work. These companies in turn employed over 160 contractors from Burera, including 38 in hospitality, 55 in hygiene and

sanitation, 67 in security, facility maintenance, and constructions to work at UGHE.

Design

A questionnaire was used to collect information about the financial status of contractors employed by UGHE.

Sample and sampling

All contractors employed by one of the four contracted companies on a full-time or part-time basis were the target population. Participants who had been employed within 6 months of data collection were excluded. Out of all 160 contractors who worked at the University at the time of data collection, 138 met the selection criteria. We aimed to sample all individuals who fulfilled the selection criteria.

Data collection tool

A questionnaire was developed by the study team based on previous similar studies with the same context (Bukuru et al., 2021). The questionnaire had two parts. The first part collected basic demographic information including age, marital status, education level, employment, and more. The second part evaluated participants' income level, savings, and 12 socioeconomic indicators including the ability to afford food, water electricity, clothes, family health insurance, school expenses, change in Ubudehe category (Rwanda socio-economic category), owning a bank account, radio, television, phone, and livestock before and after employment by UGHE.

Data collection

Data was collected by four non-UGHE staff who were part of the study team, who had been trained on the survey and consent, ethics, and power dynamics in research prior to data collection.

Data collectors approached participants and explained the detailed information of the study before seeking written informed consent. Participants who agreed to take part in the research then set up a convenient time with the data collector to administer the questionnaire. Data was collected in a private room. The data collector read the questions to the participants in Kinyarwanda (the local language) and recorded the answers electronically through tablets. The data was later downloaded into an excel sheet for cleaning.

Measures

The key measures of this study included:

Median change in income – measured as the difference between the current and before working at UGHE. The “before income” was adjusted for inflation based on the Consumer Price Index (CPI) of the year when joining UGHE to the year of data collection (World Data, 2023; Thompson, 2009), so that the before and current income were comparable.

Median change in saving - measured as the difference between the current and before working at UGHE, adjusted for inflation. Same inflation adjustments were made to the “before” saving amount.

Percentage in poverty – the percentage of participants living in poverty was calculated based on the World Bank poverty

value, which was 1.9USD before 2022, and 2.15USD since 2022 (ReliefWeb, 2023). The value was converted to Rwandan Francs based on the average exchange rate of that year (Exchange rate, 2023).

Percentage improved in ability to afford the 12 indicators – improved was defined as moving from “could not afford” to “could afford.”

Data analysis

Descriptive statistics were used to summarize demographic information, change in socio-economic indicators, and quality-of-life responses. Wilcoxon signed-rank test was used to analyze the change in income and saving amounts before and after UGHE employment. Chi-square tests were used to assess the association between the number of individuals that fall within the poverty level before and after joining UGHE, and further divided by gender. McNemar’s tests were ran to analyze the change in poverty level – overall and by gender. The Spearman correlation test was conducted to assess the association between employment duration and change in income, as well as change in savings. Mann Whitney, Kruskal Wallis, and spearman correlation tests were used to detect associations between gender, profession, duration of employment and pre and post-income, saving, change in income, and change in saving amounts. All statistical analyses were conducted using SPSS (IBM v.26) with P-value set at 0.05.

Results

A total of 138 (100%) contractors employed by UGHE who fulfilled the selection criteria participated in the study; 53.6% were male and 46.4% were female. The mean age of participants was 30.7 years, with an average duration of employment of 23.5 months. Among all participants, the average household size was 4.5 people per household and the mean number of employed household (HH) members was 1.6. Majority of the participants had completed high school (67.4%), were married (55.8%), and reported to be their household’s primary breadwinners (67.4%). Of all the respondents, 42.8% were employed as security personnel, 37.7% were cleaners, 16.7% kitchen staff, and 2.9% in maintenance (Table 1).

Table 1: Demographic characteristics of participants

Characteristics	n (%)
Sample Size (N)	138

Table 2: Median change in continuous variables before and after UGHE employment

Indicator	Median (IQR) Before UGHE	Median (IQR) After UGHE	P-value
Monthly Income (RWF)	18,926 (39,844)	70,000 (15,000)	<0.001 *
Monthly Savings (RWF)	0 (10,000)	13,000 (28,500)	<0.001 *

* Statistically significant, p-value set at 0.05

The four items reported by respondents that had the most improvement were: 1) able to open a bank account (46.4%), 2) able to afford electricity (33.3%), 3) able to own livestock (27.3%), and 4) able to afford food (23.2%). The two items reported by the respondents that had the least improvement were: 1) ubudehe category (2.9%) and 2) ability to afford television (5.1%). Two items that

Sex	Female	64 (46.4%)
	Male	74 (53.6%)
Age (years)	Mean (range)	30.8 (21-66)
Duration of employment (months)	Mean (range)	23.5 (6-55.8)
Household size	Mean (range)	4.5 (1-10)
Number of employed HH members	Mean (range)	1.6 (1-6)
Education level	None	3 (2.2%)
	Primary	16 (11.6%)
	Junior High	17 (12.3%)
	High School	93 (67.4%)
	University	9 (6.5%)
Job discipline	Cleaner	52 (37.7%)
	Kitchen	23 (16.7%)
	Security	59 (42.8%)
	Maintenance	4 (2.9%)
Marital Status	Single	57 (41.3%)
	Married	77 (55.8%)
	Divorced	3 (2.2%)
	Widowed	1 (0.7%)
Primary Breadwinner	Self	93 (67.4%)
	Partner or spouse	16 (11.6%)
	Other family member	29 (21%)

The median adjusted monthly income increased from 18,826 Rwandan Francs (RWF) before joining UGHE to 70,000 RWF after joining UGHE (P<0.001), while the median monthly savings increased from 0 RWF to 13,000 RWF (P<0.001) (Table 2). Out of all respondents, 95% of them reported an increase in monthly income and 69% reported an increase in monthly savings (Table 3)

respondents reported deteriorated the most were 1) ability to afford buying phones (42.4%) and 2) able to own livestock (18%) (Table 3).

Table 3: Summary of changes in 14 socio-economic indicators

Socio-economic Indicator	Reduced, n (%)	No Change, n (%)	Increased, n (%)
Monthly Income	7 (5%)	0 (0%)	131 (95%)
Monthly Savings	14 (10%)	28 (20%)	95 (69%)
Ubudehe category	7 (5.1%)	127 (92.0%)	4 (2.9%)
Affording food	3 (2.2%)	104 (74.6%)	32 (23.2%)
Affording water	5 (3.6%)	125 (90.6%)	8 (5.8%)
Affording clothes	2 (1.4%)	121 (87.7%)	15 (10.9%)
Affording school expenses	5 (3.6%)	117 (84.8%)	16 (11.6%)
Affording family health insurance	0 (0%)	108 (78.3%)	30 (21.7%)
Affording electricity	1 (0.7%)	91 (65.9%)	46 (33.3%)
Owning a bank account	0 (0%)	74 (53.6%)	64 (46.4%)
Owning a radio	6 (4.3%)	106 (76.8%)	26 (18.8%)
Owning a TV	2 (1.4%)	129 (93.5%)	7 (5.1%)
Owning a phone	59 (42.4%)	59 (42.4%)	21 (15.1%)
Owning livestock	25 (18.0%)	76 (54.7%)	38 (27.3%)

The number of respondents living in poverty was significantly reduced from 74 (80.4%) to 66 (47.8%), with $P < 0.001$ (Table 4). No statistical differences were found between the proportions of male and female living in poverty in both before ($P = 0.788$) and after joining UGHE ($P = 0.733$) (Table 5). Significant proportion of respondents who emerged from poverty were found in the female respondents ($P = 0.02$), as well as in the overall sample ($P = 0.019$) (table 6).

Table 4. % of participants living in poverty

	pre	post	P value
In poverty	74 (80.4%)	66 (47.8%)	<0.001*
above poverty	18 (19.6%)	72 (52.2%)	

*Significant at $P < 0.05$

Table 5. % of participants living in poverty by gender

	pre			Post		
	in poverty	above poverty	P-value	in poverty	above poverty	p-value
male	44 (60%)	12 (67%)	0.788	34 (52%)	40 (56%)	0.733
female	30 (40%)	6 (33%)		32 (49%)	32 (44%)	

Table 6. % of participants changed in poverty status, overall and by gender

			After UGHE		P-value
			In poverty	Above poverty	
Before UGHE	Overall	In poverty	40 (43%)	34 (37%)	0.019*
		Above poverty	4 (4%)	14 (15%)	
	Female	In poverty	17 (18%)	13 (14%)	0.02*
		Above poverty	0 (0%)	6 (7%)	

	Male	In poverty	23 (25%)	21 (23%)	0.334
		Above poverty	4 (4%)	8 (9%)	

*Significant at P<0.05

No statistically significant difference was found between gender and change in income (P=0.067). The median change in income was statistically different by the job profession (p<0.001). The duration of employment was significantly positively correlated with income change (P=0.006) (Table 7).

Table 7: Correlation between demographic characteristics and median income (pre-, post-, and change)

Characteristics		Income pre	P-value	Income post	P-value	Income change	P-value
Sex	Female	4,981	0.019*	64000	0.949	50,862	0.088
	Male	28,272		65034		40,117	
Profession	Cleaner	11,455	0.002*	70,000	<0.001*	58,711	<0.001*
	Kitchen	45,235		80,000		47,383	
	Security	9,961		55,000		37,745	
	Maintenance	22,617		100,000		77,383	
Profession (post-hoc)	Maintenance – kitchen		0.372	0.622		0.049*	
	Maintenance – cleaner		0.314	0.11		0.077	
	Maintenance – security		0.265	0.089		0.009*	
	Kitchen – cleaner		<0.001*	0.155		0.072	
	Kitchen - security		0.001*	<0.001*		0.223	
	Cleaner - security		0.551	<0.001*		<0.001*	
						ρ	P-value
Duration of employment						0.196	0.021*

*Significant at P<0.05

Significant differences in saving were found among different job professions before joining UGHE (P=0.04) and after joining UGHE (P=0.005) (Table 8).

Table 8: Correlation between demographic characteristics and median saving (pre-, post-, and change)

Characteristics		Saving pre	P-value	Saving post	P-value	Saving change	P-value
Sex	Female	0	0.051	10,000	0.07	10,000	0.234
	Male	1,992		15,000		10,000	
Profession	Cleaner	0	0.04*	15,000	0.005*	10,000	0.114
	Kitchen	10,000		25,000		20,000	
	Security	0		10,000		8,000	
	Maintenance	0		35,000		25,000	
Profession (post-hoc)	Maintenance – kitchen		0.372	0.767		0.669	
	Maintenance – cleaner		0.866	0.247		0.29	
	Maintenance – Security		0.654	0.121		0.128	
	Kitchen – cleaner		0.009*	0.033*		0.338	
	Kitchen - security		0.010*	0.001*		0.035	
	Cleaner - security		0.688	0.164		0.241	

					ρ	P-value
Duration of employment					0.067	0.440

*Significant at $P < 0.05$

Discussion

This study indicated that employment through UGHE had improved the overall socio-economic status of the members in Butaro sector, Rwanda. This study surveyed 138 staff from the neighboring community, who had worked at UGHE for at least six months.

Most respondents reported improvements in their income (95%) and the total amount of savings (69%), with median income significantly increased by 51,174RWF, and median saving increased by 13,000RWF. Such change could help many of the workers emerge from poverty. The degree of poverty in the region remains an issue. Before joining UGHE, 74 (80.4%) of the respondents were living below the poverty line and this reduced to 66 (47.8%) since working at UGHE. The change was more obvious among female workers.

Before joining UGHE, the income between men and women significantly different, with the median income for men (28,272RWF) being approximately seven times more than women (4,981RWF). Forty-six respondents had no income at all. And among them 28 (61%) were women and 18 (39%) were men. After joining UGHE, income was significantly increased by 74% ($P < 0.001$), with both men and women have equally increased their income ($P = 0.949$).

UGHE recognizes that women often are underrepresented and underpaid in the workforce and strives to break the existing bias by providing equal job opportunities and pay to both male and female workers. The results of our study highlighted that there was an income gap between men and women before joining UGHE, with a lot of women having no income at all. Since joining UGHE, this income gap has closed. The results reflected the effort that UGHE has put into promoting gender equality, both within its staff and student body.

The job opportunities provided by UGHE also contributed to helping contractors to emerge from poverty. Before joining UGHE, over 80% of them were living in poverty. That prevalence was significantly reduced to 47.8% ($P < 0.01$) since working at UGHE. There were no differences in the proportions of people living in poverty by gender, both before ($P = 0.788$) and after ($P = 0.733$) joining UGHE. There was also significant increase in their saving, with the average saving increased by 214% ($P < 0.001$). The number of people having a bank account also increased from 52.2% to 98.6%.

With the increase in income, their ability to afford various daily items had increased, with most increase in electricity, food, health insurance, and owning livestock. However, we also noted that a small percentage of respondents reported deterioration in their abilities to afford some items. While the proportion of respondents experiencing deterioration is relatively small, further investigation on the root causes should be conducted in the future.

The employment opportunities offered by UGHE aimed at providing more stability in their work status as well as a steady stream of income. This was reflected in the duration of the employment - the longer they have been employed, the larger the magnitude of income change.

However, we have found that the magnitude of increase in income and savings were not evenly distributed across the workers. Security guards were paid significantly less than the maintenance technicians, cleaners, and kitchen staff. This could be due to the fact that these four groups of workers were hired through four different companies; the pay rates varied across the hiring companies. While individual companies set their own pay scales and policies, UGHE can potentially discuss with them and advocate for higher pay.

This study was able to capture 100% of eligible staff in data collection, making the information relatively representative. However, the results must be seen in light of some limitations. A challenge encountered when analyzing the data in this study was that the other sources of income were not considered. Spending power depends on the amount of total income. The salary they received from working at UGHE could be one portion of their total income. This study did not investigate whether the respondents had other jobs outside of UGHE, or income from other family members. Without such information, we could not definitively conclude that the improvement in income was due to the activities of the UGHE-employment alone. Additionally, some of the respondents were employed since 2018 – four years before the data collection, recall bias must be considered when interpreting the results. To minimize potential interviewer bias, the data collections were conducted by non-UGHE staff without the presence of any UGHE members. However, whether the respondents viewed such division could not be guaranteed.

Economic empowerment of women has gained increasing attention as a key factor for promoting gender equality, improving social determinants of health, and contributing to sustainable development. . This study provided evidence on how the university-provided employment opportunity had enhanced the financial status of the members in the neighboring community, especially women. The study highlights the need for a more structured and intentional employment approach to be adopted to empower impoverished communities economically.

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Conflict of Interests

The authors have no relevant financial or non-financial interests to disclose. All authors declare no conflict of interest.

Ethical approval

This research was reviewed and approved by the Institutional Review Board at the University of Global Health Equity (Protocol #184).

Consent Participate

All participants provided informed consents.

Consent for Publication

All authors consented to publish.

Author's Contributions

Conceptualization: All authors; methodology: Gloria Igihozo, Oemba Jean de Dieu, Sabrina Gwiza, Kevin Shimwa Gakuba, Chanciella Teta, Patrick Mugisha, Aimable Uwimana, Rex Wong; Data collection: Oemba Jean de Dieu, Sabrina Gwiza, Kevin Shimwa Gakuba, Chanciella Teta, Patrick Mugisha; formal analysis: Gloria Igihozo, Oemba Jean de Dieu, Aimable Uwimana, Rex Wong; writing– original draft preparation: Gloria Igihozo, Oemba Jean de Dieu, Rex Wong; writing–review and editing, all authors.

Data Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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