RELATIONSHIP AMONG MARITAL STATUS, PROFESSION AND POVERTY: A STATISTICAL EXPLORATION

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KEYWORDS

Profession, Marital Status, Poverty, Multiple Comparison Tests

ABSTRACT

This research is designed to identify the causes of poverty. Current research also points out two import demographic factors (marital status and profession) and finds relationship with poverty. Secondary data was used from the Statistical Department with their permission. The multiple comparison tests and Chi-Square tests were used for obtaining the results. Results propose those public sector employees are more contented than from other those who are working in diverse sectors/professions. The results also indicate that married people are richer as compare to unmarried people. Similarly, divorced women are suffering much from the poverty as compare to married women. Overall marital status has significant relation with wealth index or poverty. Profession is also play a significant role with wealth index. In future researches, other vital variables like gender and the education level may also include. For generalizing result this kind of research may also conducted in other cities of Pakistan to explore the causes of poverty in both rural and urban areas along with its possible solution through statistical explorations.

INTRODUCTION

The main purpose of this research is to analyze the status of wealth index and also finds relationship with profession and marital status. Poverty and profession are interlinked closely with each other. A research was conducted in United States, where they analyzed 7 million people under the age of 65 years, who were earning less than $23000 ("Austere federal poverty line for a married couple with two children"). The parents with the minor children, who are living below the poverty line among them 43%, are not separated. The marriage can be considered as best prospect to manage finance "for better". There was ad slogan written on bus body that "married people earn more money". The literature revealed that the ratio among the low and high level income people's in society is being considered right indicator to know the marital status. There is 2% reduction in marriage from the 10% individuals of the low level income (Goldscheider, Bernhardt & Lappegård, 2015).

There is another study conducted in South Africa's Township of Bophelong, where they analyzed female households to understand the statics related to poverty. Firstly, poverty was explained and then it was analyzed on entire sample selection. On the base of data taken, there was logistic regression determined with consideration of economical statics (dependent variable) and demographical location (explanatory variables). The research was concluded with that household age bracket, family members in house and earning resources of family head particularly explained indicators as the poor. Number of family members in a house & their poor condition are directly linked but the age bracket and working status of the family head in the household are inversely linked with the poverty. The literature revealed that there was 42.7% increase in the female household earning heads particularly between periods of 1988 to 1997 in most of underdeveloped areas of Philippines.

There are other studies concluded that high number of the poor households are run and headed by females. A research suggests that there is increased ratio of poverty particular in rural areas females in country region of South Africa. It has been observed that there is increased ratio of female's poverty in rural areas happen due to male adults shifting to urban areas for employment and other earning sources and their women's left behind depending on inconsistent remittances. It has also been witnessed that male adults who shifted to urban areas for the jobs never return back to their families and homes. The procedure to analyze the average deficit of income from the poverty line by the poor ones is called poverty gap however, the poverty gap matrix or index is utilized to understand degree of difference among the poverty line and poor people's income. Poverty gap can be considering as one of tool to reduce poverty over a real time target based shift to poor peoples.

LITERATURE REVIEW

As per different reports of World Bank (2018), there is noticeable progression in poverty reduction can be witnessed during the last 30 years, whereas such consistent progression still required to improve the lives of poor's as 736 million people (1-10% of whole world) are still facing extreme level of poverty and they geographically located in the rural areas. May be the speed and impact of poverty reduction activities and efforts slow down due to the systematic hurdles and high level of reluctances faced by the "left behind", which is the reason they are unable to get benefit from the overall world economic growth. Mostly studies used facts and figures from the World Bank Reports. The analysis is consisting on the consumption data from 2015 and poverty line (USD 1.90 per day) were explained in 2011 (World Bank, 2018). It was difficult to provide a consistency among diverse ways to collect the data significantly on the rural based poverty due to frequent access to these areas.

By understanding the different facts and factors on the base of the real data availability, there should be focused efforts on the poorest to improve their lives to reduce poverty effectively (World Bank, 2018). The positive results to reduce extreme level of poverty are importantly based on the systematic structures of the societies and their adequate distribution of earning sources (World Bank, 2018). Such societal structure may affect indirectly to the process and actions of the poverty reduction but to have real time access to poor people always demands the concrete and focused efforts and even broader latest effective formulas (Anwar, Qureshi, Ali & Ahmad, 2004). Such efforts may be included the right understanding of different hurdles and issues being faced by the extreme level poor (Chaudhry Malik & Ashraf, 2006) in comparison to medium level and remaining poor people living in those areas, also the high and the productive investment and other different programs and procedures where you are able to reach out directly (World Bank, 2018).

There is need to understand and respect the poor people societal, earning independency and their capacity to become part of game to reduce extreme level poverty. A research conducted by Castañeda, Doan, Newhouse, Uematsu & Azevedo (2018) concluded that rural extreme level poverty is basically the 80% of whole world's extreme level poverty. The extreme level poor are not the same kind peoples, they even face different type social and un-even distribution of earning resources, and they also face favoritism, remoteness and political un-division of power (Islam, Ghani, Kusuma & Theseira 2016). In the era of 1980's in Pakistan, there was decrease in rural poverty but remains unchanged and even on higher side in 1990's. As per facts and figures, there was smooth downfall from 49.3% (1984-1985) to 36.9% (1990-1991) in rural based poverty due to real growth in Pakistan's gross domestic product (average 3.9%/year) mainly from the agriculture sector (Rahman & Chaudhry 2009; Khan, Rehman, Jingdong & Hussain, 2015; Rahman & Chaudhry 2015).

Although, there was greater increased of 4.6% in GDP in 1990's from agriculture sector have no effect on the reduction of rural based poverty (Anwar et al., 2004). Surprisingly, the % of people who live in the poverty remains same particularly in the era of 1990-1991 like 36.9% & in 1998-1999 remains at 35.9%. There are different points to describe the facts and figures about the poverty in the era of 1990's, such points are the exaggerated estimation of income growth from the livestock sector, the rapid increase in the prices of different consumer products, inadequate division of returns to the lands and lower level production of the crops become reason for decreased portion of overall gross domestic product (Chaudhry & Rahman 2009). But from years of 1998-1999 there is consistent and steady reduction in medium term trends of poverty due to "real household incomes, income-based poverty indicators and the agricultural outcome in Pakistan" (Anwar et al., 2004).

Current household related survey shows the rapid decrease in the rural based poverty in Pakistan from the period of 2001-2002 to 2004-2005 (Malik, 2015). Long term trends of the poverty are not much appreciating because there is no real improvement in the level of expenses of the poor's, as it remains at 40% in the period of 1998-1999 & 2004-2005 (Chaudhry & Rahman 2009). During period of 6 years from 1998-1999 to 2004-2005, there are changes in production of agriculture sector due to the weather, also the positive changes in rural based real time incomes and real increase in the level of expenses by the poor's become reason for a very steady change in the level of poverty (Bhutto & Bazmi 2007; Husain, Chaudhry, Rahman, Mehmood, Haddad & Husain 2017; Shakeel, Gran, Sletner, Slinning, Martinsen, Holme & Jenum 2015). Different factor, such as increased number of workers' remittances is reason for increased domestic and national incomes mainly from period of 2001-2002 (Husain, Parveen, Saeed, Jafri, Rahman & Chaudhry, 2011).

Among the medium term trends, it has been observed that the investing in human and physical infrastructure is one of the major reasons for the increased national & real time incomes particularly in the rural Pakistan (Chaudhry & Rahman 2009). The estimation and analysis of poverty level in Pakistan heavily depend on the method and procedures being adopted to collect the data because highest number of rural based households' per capita expenses are very near to the "official poverty line" (Chaudhry & Rahman 2009). In 2001-2002, there were 10.9% rural based households who were able to manage per capita expenses about plus minus 5% of the "official poverty line" but in 2004-2005, it was about 8.95% of rural based households who were able to manage per capita expense about plus minus 5% of the "planning commission official poverty line" like Rs. 878.6" expenses per capita as per report (Chaudhry, Malik & Ashraf 2006; Dilawar, Ejaz & Jan, 2012).

Different basic factors which are being utilized to determine the results may cause to the inadequate or improper results, such as the little calculation mistakes in the real time income and real time change in the expenses, pricing indicators and the other facts being utilized to determine the poverty line and due to that there can be identifiable variation among real time poverty estimations (Anwar et al., 2004). By considering the possible misunderstanding about poverty line explanation, there is focus to avoid that by utilizing bottom level 40% of the per capita household's expenses division (Rehman et al., 2015). On the adoption of this definition and process, real poor will never ever be recalculated and also it will not mislead, although in Pakistan poor's data is collected on the base of different food level consumption and the real time needs such as need based poverty line which causes the holistic increase in the poverty and which further causes dispersions poverty (Chaudhry & Rahman 2009; Morrison, Wieland, Cha, Rahma & Chaudhry, 2012).

According to the researchers, there are huge numbers of employees in Bangladesh, South Africa and Pakistan, who are facing with the unemployment and professionally at lower positions (Berthoud, 2000; Brynin & Guveli, 2012; Heath & Cheung, 2006; Heath & McMahon, 1997; Platt, 2005). As per the study by Brynin and Guveli (2012) profession has real time direct effect on reduction of poverty. But on other hand, some researcher expressed that there is no link between the profession and poverty (Dilawar et al., 2012); Azhar, Hassali, Ibrahim, Ahmad, Masood, & Shafie, 2009; Yarash, Smith, & Mielke 2010; Qamer, Shehzad, Abbas, Murthy, Gilani, & Bajracharya 2016). That is why current research chooses the profession as predictor of elimination of poverty. Other variable of current research is marital status; marriages also play vital role for reduction of poverty. Because married men feel more liability of earning as compare to unmarried men due to these reasons current research has considered marital status as second variable of the study.

MATERIAL AND METHODS

Formula for Calculation

Rencher and Schaalje (2008) explain that there is some situation in the regression that the response variable has only two conceivable outcomes. Then the researcher use the following formulas.

Model with one x:

$$y_i = \beta_0 + \beta_1 x_1 + €_i; \qquad y_i = 0, 1, 2, \ldots, n. \qquad (2)$$

Y_i either 0 or 1, This can be expressed as

$$E(y_i) = P(y_i = 1) = pi,$$
$$1 - E(y_i) = P(y_i = 0) = 1 - p_i . \qquad (3)$$

The distribution is known as the Bernoulli distribution. By (2) and (3), we have

$$E(y_i) = p_i = \beta_0 + \beta_1 x_i. \qquad (4)$$

Than we obtain

$$Var(y_i) = E[y_i - E(yi)]^2$$
$$= p_i(1 - p_i) \qquad (5)$$

By (4) and (5),

$$Var(y_i) = (\beta_0 + \beta_1 x_i)(1 - \beta_0 - \beta_1 x_i),$$

The change in everyy$_i$ relays on value of x_i. This shows the violation of the assumption of constant variance, and the estimators $\hat{\beta}_0$ and $\hat{\beta}_1$ computed. For the solution of optimal estimators of b_0 and b_1,

$$\hat{\beta} = (XV^{-1}X)^{-1}X\,V^{-1}y$$

Since $0 \le p_i \le 1$. For fitting (4) by using generalized least squares for $\hat{p}_i$

$$\hat{p}_i = \hat{\beta}_0 + \hat{\beta}_1 x_i,$$

The value of $\hat{p}_i$ may be less than 0 or greater than 1 for a number of values of x_i. Model for E (y_i) is restricted between 0 and 1. For this situation a is the best way is the logistic regression model.

$$p_i = E(yi) = \frac{e^{\beta_0 + \beta_1 x_1}}{1 + e^{\beta_0 + \beta_1 x_1}} = \frac{1}{1 + e^{-\beta_0 - \beta_1 x_1}} \qquad (6)$$

by using simple transformation (6) is

$$\ln\left(pi/(1 - pi)\right) = \beta_0 + \beta_1 x_1 \qquad (7)$$

The Chi-Square Test

The chi-square test is a test which was originally proposed by Pearson (1900), and it provided one of the earlier methods of statistical inference. Let the random variable X_t be n (μ_i, σ_i^2), i = 1,2,. . . , n, and let X_1, X_2, . . . , X_n be mutually stochastically independent. Thus the joint p.d.f of these variables is

$$\frac{1}{\sigma 1\, \sigma 2 \ldots \sigma n\, (2\pi)^{n/2}} \quad \exp\,[-1/2(\sum I^{n} \frac{xi-\mu i}{\sigma i})^2\,] \qquad -\infty < x_i < \infty.$$

Data Collection and Analysis

Secondary data is taken from federal Bureau of statistic. Multiple comparison tests were used to find out variation in poverty elimination (wealth index) in relation to profession and marital status. Correlation analysis is also used to check the dependency of poverty elimination (wealth index) with profession and marital status. In this test value of p which are $\leq$0.05 are considered as significant value.

RESULTS AND DISCUSSIONS

Binary Logistic Regression

Logistic Regression is very prominent technique for predicting the dependent variable with the help of different categorical variables. This test is described as below.

	(1)	(2)	(3)
"Marital Status" (Basic= Married People)			
Divorced	0.178***		0.137***
	(0.034)		(0.022)
Widowed	0.038**		0.035***
	(0.0172)		(0.016)
Unmarried	-0.034***		-0.044***
	(0.008)		(0.008)
	(0.011)		(0.013)
"Profession" (Basic: Unemployed)			
Government Employee		-0.278***	-0.173***
"Private Sector Employee"		0.047**	0.007
		(0.022)	(0.0191)
"Agriculture Sector"		-0.0032	-0.024
		(0.022)	(0.020)
"Housework/ Student"		-0.057***	-0.0443**
		(0.022)	(0.015)
Other		0.037	-0.001
		(0.022)	(0.021)
"Observations"	18,335	16,287	15,055
Pseudo R Square	0.18	0.19	0.26

*** p<0.01, ** p<0.05, * p<0.1

The explanatory power of the model No. 1 is taken as the seventeen percent. These are considered as explanatory variables. Values of p describes that both the variables provide the significant results. Model No 2 describes about marital status. This variable is further divided into sub categories. Categories are named as married, unmarried, divorced and widow people. The married is considered as basic category. This model also contains the seventeen percent explanatory power. The results explain that people who are enjoying marriage life contain extra wealth index but unmarried people are suffering much in this regard. This result is same like previous researches which describe that due to marriages people want to earn more money that is why they are responsible and add in the wealth

index and become the source of decreasing the poverty (Li, Zhang, Yang & Attané, 2010; Riaz, Fatima, Riaz & Batool, 2016).

The profession is taken in model 3; this variable is also considered as describing variable of poverty. The unemployment, the government employee, private employee, agriculture worker, housework/students are considered as subcategories of people. Unemployment is taken as main category. The results indicate that poverty decreases by conversion of people from base category to other categories. This result is same like the result of Khan & Khan (2009). They evaluate that due adaptation of profession result in reducing the poverty. Fredericks, Mundy, & Kosa (2010) also find the same kind of relationship.

Poverty Associated with Marital Status

H_1: Marital Status is Linked with Elimination of Poverty

Chi Square			
	Value	Df	P
"Pearson Chi-Square"	58.001[a]	12	0.0000
"Likelihood Ratio"	58.999	12	0.0000
"Linear-by-Linear Association"	15.111	2	0.0000
Valid Cases	18609		

The acceptance of hypothesis is based on p value in chi square test. All the p values are less than 0.01 this means that marital status is related with level of poverty. This result is same like the previous researches which describe that due to marriages people want to earn more money that is why they are responsible and add in wealth index and become source of decreasing the poverty (Li et al., 2010; Riaz et al., 2016).

Poverty Associated with Profession

H_2: Poverty is Linked with Elimination of Poverty

Chi Square			
	Value	Df	P
"Pearson Chi-Square"	56.021[a]	13	0.0000
"Likelihood Ratio"	54.925	13	0.0000
"Linear-by-Linear Association"	16.222	3	0.0000
Valid Cases	18609		

The acceptance of hypothesis is based on p value in chi square test. All the p values are less than 0.01 this means that profession is related with level of poverty.

CONCLUSION

This research is designed to check the role of marital status and profession in reduction of poverty in district Bahawalnagar. The results indicate that married people are richer as compare to the unmarried people. Similarly, divorced women are suffering much from poverty as compare to married women. Overall marital status has significant relation with wealth index or poverty. Profession is also play a significant role in elimination of poverty. Results propose those public sector employees are happier than people who are working in different sectors or professions. In the future researches, other important variables like gender, education level may also include. For generalizing the result this kind of research may also conducted in other cities of Pakistan.

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