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Impact of Poverty and Other Related Variables on Women's Awareness of Infectious Diseases in Egypt

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Abstract:

This study aims to assess the impact of poverty on women's awareness of some infectious diseases and their correct ways of transmission. To achieve the goals of this study, a comparison between monetary and non-monetary poverty measures is investigated first to select one of these measures that better suits the available data. Then the impact of poverty and other related variables on women's knowledge of such diseases is estimated. The EDHS 2005 data is used to achieve the objectives of the study. Additionally, HIECS 2005 is used to estimate a relationship between the household expenditure and some socioeconomic characteristics, to be applied on the EDHS data. Accordingly, the household expenditure for EDHS data will be estimated to be used as monetary (expenditure-based) poverty indicator.

The comparison between the two approaches of poverty measures shows that both of them have significant relationships with women's characteristics as well as their awareness of infectious diseases. However the asset poverty, which measures the wellbeing, has a stronger relation than expenditure-based poverty. Additionally, there is a positive significant strong relationship between the two approaches of poverty. As a result, the study relies only on the asset poverty to assess the impact of poverty and other related variables on women's awareness of infectious diseases. Additionally, if the available survey does not provide data about income or expenditure, one can rely on the asset poverty to investigate the impact of poverty on any phenomenon. The logistic regression model is used to estimate the impact of poverty and other variables on the awareness of infectious diseases. According to the logistic model, old non poor women in urban areas who completed a university level of education and above, reading newspapers, listening to radio and watching TV at least once a week, working for cash, having smaller number of children, and have been married in old age to well educated and employed husbands are aware of most infectious diseases and their correct ways of transmission.

Keywords: Consumption-based Poverty, Asset Poverty, Infectious Diseases, AIDS, Hepatitis C, TB.

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1. Introduction

Poverty is one of the most important issues which come on the priorities of the policy makers' agenda all over the world, especially in the developing countries. Poverty goes beyond lack of income. It is multidimensional, encompassing economic, social, and governance perspectives. Economically, the poor are not only deprived of income and resources, but also of opportunities. Limited education affects their ability to get jobs and to access information that could improve the quality of their lives. So poverty represents a major obstacle for development and enhancing economic growth in many countries around the world.

However, in addition to poverty there is another obstacle that can threaten economic growth in any country which is infectious diseases. Accordingly, when these two obstacles are found in a given society they are enough to stop any trial for development in this society. Disease is a medical condition, but its prevalence and impact are social and economic facts. There is a strong association between poverty and infectious diseases. Previous literatures indicated that poor countries tend to have a higher proportion of people infected with such diseases, and also a large percentage of people with such diseases tend to be poor.

In September 2000, 189 countries signed the millennium declaration which led to the Millennium Development Goals (MDGs), the first goal of which calls for halving the proportion of people living in extreme poverty and those suffering from hunger between 1990 and 2015. At the same time the sixth goal is to combat HIV/ AIDS and other major diseases [21]. Achieving these goals requires a full understanding to the relationship between awareness of these diseases and being poor or non-poor. The lack of sufficient knowledge of infectious diseases could be one of the major causes behind the prevalence of such diseases and hence falling on poverty. On the other hand, insufficient knowledge of these diseases could be a result of being poor.

- **Prevalence of infectious diseases in Egypt**

Egypt has a very high prevalence of Hepatitis C virus (HCV) and a high morbidity and mortality from chronic liver disease, and cirrhosis. Approximately 20 percent of Egyptian blood donors are anti-HCV positive [27]. Additionally, Tuberculosis is a major public health problem in Egypt. It is estimated that 18,479 new cases of tuberculosis developed in Egypt in 2005. Also, one of the most serious health and development challenges, which faces the world today, is the HIV/AIDS virus. Although it is not a public health problem in Egypt as Hepatitis C for example, there is an increasing need to educate Egyptians about this disease. Additionally some studies show that there are significant positive associations between standard of living index and awareness of AIDS [15].

- **Monetary and Non-Monetary Poverty**

Poverty has traditionally been defined as a discrete characteristic: either one is poor or not. Based on a particular indicator of welfare, a certain line or standard is drawn, and an individual or household falls on one side or the other. The "Money metric" indicator of poverty is a powerful tool to compare poverty across several dimensions. Yet, to understand poverty and to examine the impact of poverty on other phenomenon, one has to monitor "Non-Monetary" indicator alongside monetary poverty. The asset (wealth) indicator has been used increasingly with the Demographic and Health Surveys (DHS) that are applied in different countries all over the world.

There are several studies which compare income to wealth. Oliver and Shapiro [14] state that "income is a transitory measure and can be consumed as quickly as it is earned, yet wealth is a more stable indicator of status or position in society and represents stored-up purchasing power". Others develop several measures of "asset poverty," and use them to document changes from 1983 to 1998 in the extent to which American households are unable to rely on an asset cushion to sustain themselves during temporary hard times [10]. However, several studies have found that the asset index may be better thought of as acting as a proxy for long run household wealth rather than current per capita consumption. They also show that asset poverty is much more persistent than income poverty.

- **Poverty and infectious diseases**

In Egypt many studies on poverty assessment focused on how to measure poverty levels, relation between economic growth and poverty levels, and the association between poverty and household socioeconomic characteristics. The World Bank declared that overall poverty level in Egypt was 19.6 percent of the total population in 2005, which means that about 13.6 million Egyptians (one out of every five) had consumption level below the poverty line [24].

However, almost no studies in Egypt have documented the relationship between poverty status and awareness of infectious diseases. To investigate the extent to which poverty status can affect degree of awareness of infectious diseases, the study will focus only on women's awareness of such diseases, since the only survey in Egypt that deals with the awareness of these diseases is the EDHS, which collect data from ever married women. Accordingly, the study would highlight some issues concerning general policies to be followed to set systematic programs to increase people awareness of such diseases in Egypt.

Objectives of the Study

The main objective of this study is to assess the impact of poverty and other related variables on women's awareness of some infectious diseases (HIV/ AIDS, tuberculosis (TB), and HCV) and their correct ways of transmission. However, there are two approaches for measuring poverty namely; monetary (expenditure-based) poverty and non-monetary (asset) poverty. Accordingly, the study aims to compare between these two approaches of poverty to select the one that better suits the available data.

As a result, the study aims to achieve the following objectives:

1. Investigating the relationship between the expenditure-based poverty and asset poverty.
2. Assessing the impact of poverty and the other related variables on women's awareness of infectious diseases (HIV/ AIDS, tuberculosis (TB), and hepatitis C).
3. Assessing the impact of poverty and the other related variables on women's awareness of correct ways of transmission of such infectious diseases.

This study is divided into four sections in addition to this introductory one. Section two deals with the data and the methodology used in the analysis. A comparison between monetary (expenditure-based) and non monetary (asset) poverty is presented

in section three. The results of the impact of poverty on the awareness of infectious diseases and their ways of transmission is presented in section four, and finally section five presents the conclusion of the study and policy implications.

2. Data and Methodology

2.1 Data:

The data used in this study is based on the ***Egyptian Demographic Health Survey*** (EDHS 2005) [8], which was conducted on behalf of the Ministry of Health and Population and the National Population Council. This survey provides data about the awareness of infectious diseases and their ways of transmission, in addition to some socioeconomic characteristics of the women surveyed. The EDHS survey provides data about the wealth index that could be used as a proxy for poverty "asset poverty indicator", while it does not provide any data about the monetary poverty as it does not include any income, consumption or expenditure data. Accordingly, the ***household Income, Expenditure and Consumption Survey*** (HIECS 2005) [5], conducted by the Central Agency of Public Mobilization and Statistics (CAPMAS) is used to estimate a relationship between the household expenditure and some socioeconomic characteristics, to be applied on the EDHS data. Accordingly, the household expenditure for EDHS data will be estimated to be used as a monetary (expenditure-based) poverty indicator.

The Independent variables used in the analysis consist of three groups, which include:

1. **Poverty variable**, based on the two definitions; expenditure-based poverty and asset poverty. Expenditure-based poverty is measured by the estimated expenditure from HIECS data, and asset poverty measured by the wealth index available in EDHS.

   "Expenditure-Based Poverty" is estimated using three groups of socioeconomic characteristics which are available in both HIECS 2005 and EDHS 2005. These groups include: *demographic and education variables* (percentage of household members at each level of education, percentage of males and females in the household, education of household head, child labor, percentage of children less than 15 years, ... etc), *housing conditions variables* (house type, ownership of house, number of rooms in the house, source of drinking water, availability of a private kitchen, electricity supply, ...etc), and finally *ownership of durable goods* (washing machine, TV, private car, bicycle, motorcycle, mobile phone... etc). On the other hand **"Wealth Index"** is constructed using data on ownership of a range of *durable goods* (e.g. car, refrigerator, television...etc), *housing characteristics* (e.g. material of dwelling floor and roof, toilet facilities...etc), and *access to basic services* (e.g. electricity supply, source of drinking water...etc) which are collected within EDHS. Accordingly, the expenditure-based poverty includes most of variables included in the wealth index.

2. **Socioeconomic characteristics of woman,** which include current age of woman, educational level, age at first marriage, number of ever born children, employment status, and exposure to mass media (watching TV, listening to radio and reading newspaper).

3. **Other characteristics,** which include husband's educational level and occupational status, place of residence, region, household size, and gender of household head.

The Dependent variables are women's awareness of the three infectious diseases, namely; AIDS, hepatitis C and TB, and their correct ways of transmission. The awareness of the three diseases is measured by questions asked to all EDHS respondents about whether they heard of the illness or not. For those who know Hepatitis C, woman who identifies at least one correct way of transmission (injection with unclean needles, blood transfusion, and other contact with the blood of an infected person) considered aware of correct ways of transmission of HCV. Women who correctly identifies that TB is transmitted through air when an infected person cough or sneeze considered aware of TB's correct ways of transmission. However, women's awareness of correct ways of transmission of AIDS will not be included in the multivariate analysis, since women in EDHS are not directly asked about their awareness of such ways. Additionally, the percentage of women who could correctly identify the correct ways to avoid AIDS was very small proportional to the sample size.

2.2 Methodology:

2.2.1 Multiple Linear Regression Technique

The EDHS data suffers from lack of expenditure or income data. Accordingly, to estimate the expenditures of households in the EDHS, a linear regression technique have to be used. The data of HIECS 2005 was used to estimate a significant relationship (multiple linear regression) between the household's socioeconomic characteristics and the per capita expenditure of the households. Then this relationship was used in EDHS data to estimate the household's expenditure using the same estimated linear regression.

2.2.2 Logistic Regression Technique

This study uses the logistic regression technique to assess the impact of poverty on women's awareness of infectious diseases and the correct ways of their transmission, given that the dependent variables are dichotomous: takes one when woman is aware of the disease or aware of at least one of its correct ways of transmission, and zero when woman is unaware. Let P denote the probability that woman is aware of the disease:

$$P(Y = 1 / X) = \frac{1}{1 - e^{-z}}, \text{ where } \quad Z = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \ldots + \beta_p x_p,$$

The dependent variable Y is the woman's awareness of the three infectious diseases or at least one of their correct ways of transmission. The explanatory variables X are the expenditure-based poverty or assets poverty and other socioeconomic characteristics of the woman and her husband, and β_i's are the corresponding parameters.

3. Comparison between Expenditure-Based Poverty and Asset Poverty

Monetary and non monetary approaches of defining poverty are complementary approaches rather than different approaches and both should be considered. Practical implications for policy advocacy and programs to reduce poverty should be concerned

with both income and non income concepts. It is true that income alone is insufficient to provide women with adequate knowledge in general and in particular about infectious diseases.

A growing part of poverty literature emphasizes that poverty is not only a lack of income but a lack of assets as well. Assets provide an economic protection for the hard times and enable people to invest in their future. The relationship between poverty (both the expenditure and asset poverty) and women's characteristics is investigated first, and then the comparison between the two approaches of poverty is assessed.

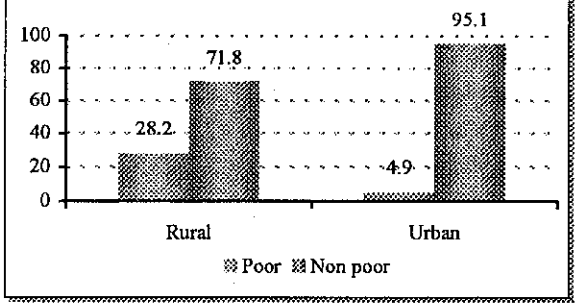
3.1 Expenditure-based poverty

Since the EDHS data has no information about household income or expenditure, the HIECS data is used to estimate a relationship between the expenditure level and the socioeconomic characteristics of households using a multivariate linear regression model. Then the estimated model from HICES data is applied to EDHS data, using the same characteristics, to estimate the per capita expenditure for each household in EDHS data. The estimated households' expenditure has been ranked and the least 20 percent were considered as poor, since the percentage of poor people according to the World Bank in 2005 was 19.6 percent.

- **Relation between expenditure-based poverty and women's characteristics**

In the following, the relationship between poverty status of woman, estimated from EDHS data, and some of her socioeconomic characteristics (which are not included in defining the poverty status) is presented. Chi-square test is used to examine the significance of all these relationships.

Figure 1: Distribution of women according to estimated expenditure-based poverty status in urban and rural areas, 2005

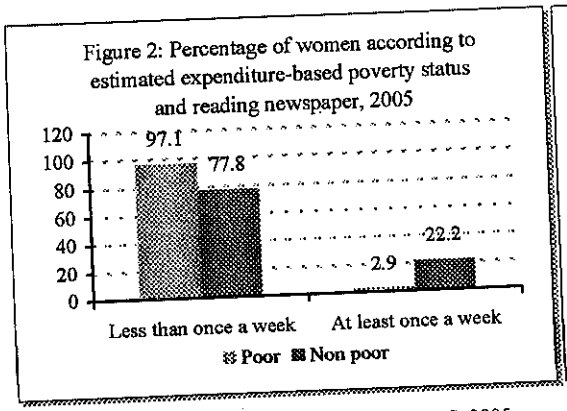


Source: Calculated by the Authors using the EDHS, 2005

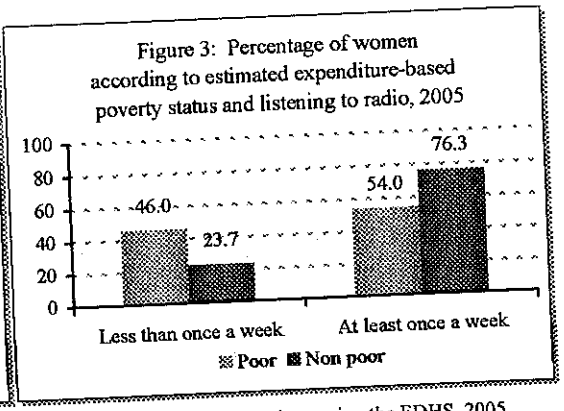
Concerning the region and place of residence, the data shows that there is a significant difference between urban and rural areas regarding the percentage of women live in poverty (p-value less than 0.0005). Almost 28 percent of women in rural areas live in poverty compared to only 5 percent among women in urban areas. However, women in rural Upper Egypt and rural Lower Egypt are the poorest in the country with poverty rates reached 46 percent and about 14 percent respectively, while metropolitan and urban Lower Egypt areas are the least poor with only about 3 percent poverty rate for each (not shown in the figure).

Regarding the exposure to mass media, the data shows that most of women are watching TV at least once a week regardless of their poverty status. While there is a significant difference between poor and non poor women according to frequency of both reading news papers and listening to radio (p-value less than 0.0005). About 3 percent of poor women are reading newspapers at least once a week, increased to 22 percent among non poor women. Same result is observed regarding the frequency of

listening to radio, where these percentages reached 54 percent and 76 percent respectively.

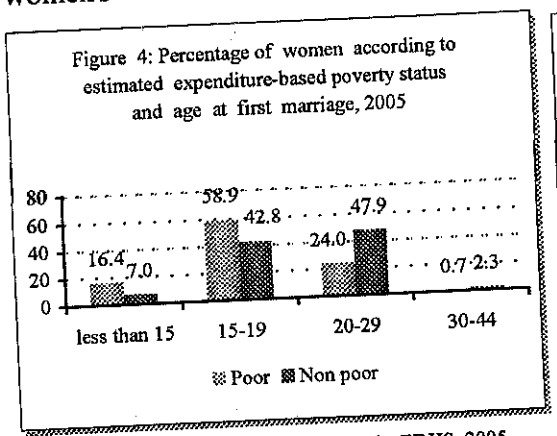


Source: Calculated by the Authors using the EDHS, 2005



Source: Calculated by the Authors using the EDHS, 2005

Concerning woman's age at first marriage and number of her ever-born children, the data shows that there is a weak relationship between poverty status on one hand and age at first marriage and number of children on the other hand. About 43 percent of non poor women were married at age (15- 19) and 7 percent were married at less than 15 years old, these figures increased to 59 percent and 16 percent respectively among poor women. Regarding the number of ever born children, the data shows that 29 percent of poor women have 4 or 5 children, this figure decreased to 21 percent among non poor women (not shown in a figure). The data also shows that there is a weak relationship between poverty status of woman and her working status (working for cash). About 9 percent of poor women were working for cash, increased to 19 percent among non poor women (see figure 5). Moreover, no significant difference is observed between poor and non poor women according to the occupational status of women's husbands.



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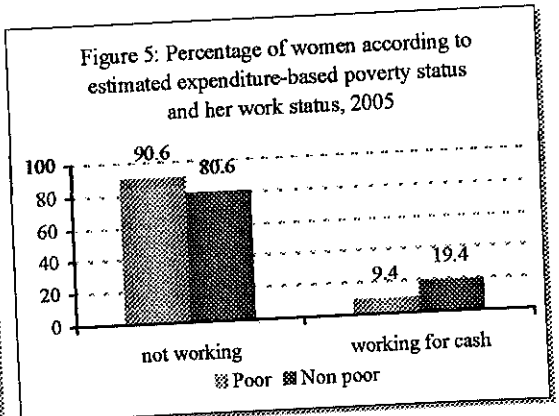
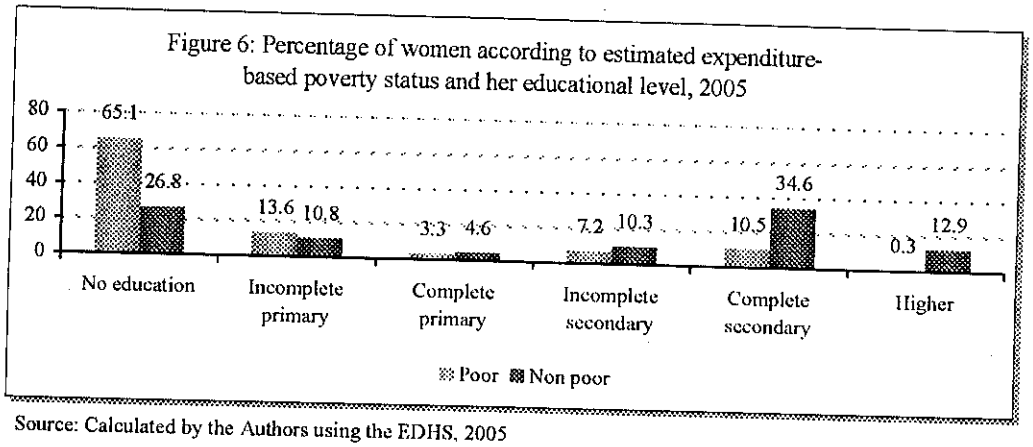


Source: Calculated by the Authors using the EDHS, 2005

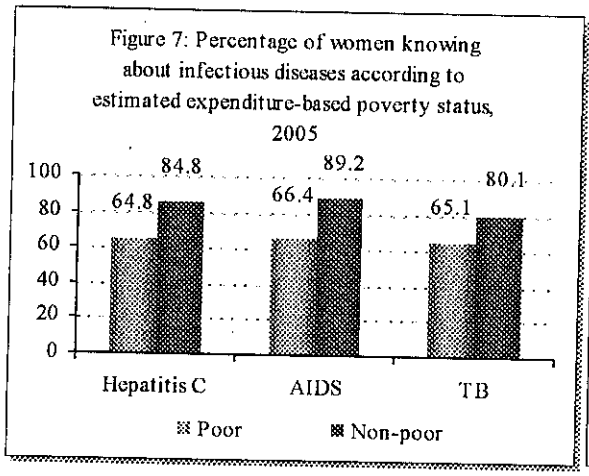
Also the relation between the poverty level and the education status of woman and her husband is investigated. The data shows that there is a highly significant relationship between the poverty level on one hand and the educational level of the woman and her husband on the other hand (p-value less than 0.0005). About 65 percent of the poor women are with no education, decreased to 27 percent among women in non-poor group. Additionally, less than 0.5 percent of poor women have university

education or higher, compared to 13 percent among non-poor women (see figure 6). The same pattern was observed regarding the educational level of woman's husband.



Source: Calculated by the Authors using the EDHS, 2005

Looking at the relationship between poverty status and woman's awareness of the three infectious diseases (HCV, AIDS, and TB), the data shows that there is a positive significant relationship between the monetary poverty and the knowledge of the three diseases, particularly AIDS and Hepatitis C as presented in Figure (7). The same result is observed regarding the correct ways of transmission of the three infectious diseases.



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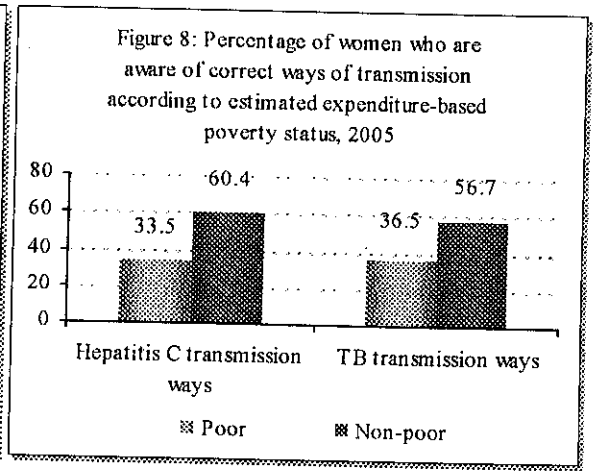
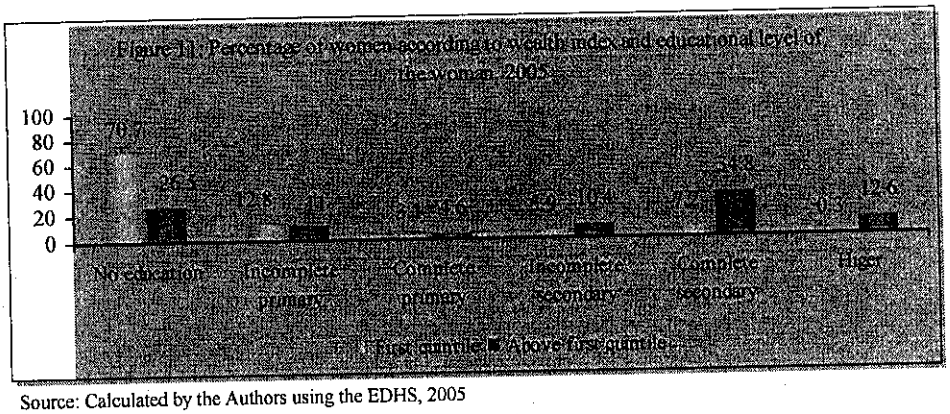


Source: Calculated by the Authors using the EDHS, 2005

3.2 Assets poverty

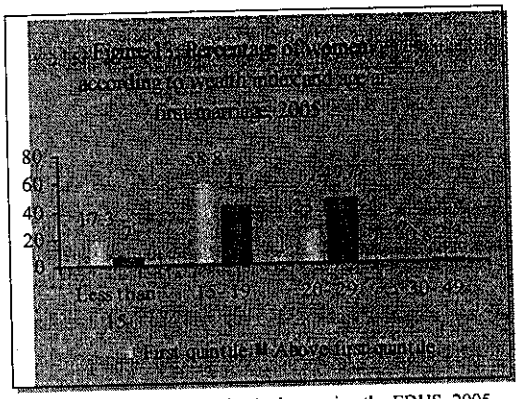
Recently, in some developed countries as the United States, the focus of the approach to deal with poverty has shifted from an income-transfer policy that tries to maintain a sufficient level of income for everyone, to an asset-based policy that aspires to increase the asset holdings of the poor. In this context wealth is considered as one of the most important measurements of poverty. Wealth is an important dimension of well-being; therefore it should be included in the household resources when defining poverty.

The relationship between the wealth index and the education status shows that there is a highly significant relationship between the wealth index on one hand and the educational level of the woman and her husband on the other hand (p-value less than 0.0005). About 71 percent of the poor women are with no education, decreased to 27 percent among women in non-poor group. Additionally, less than one percent of poor women have university education or higher, compared to 13 percent among non-poor women (see figure 12). The same pattern is observed regarding the educational level of women's husband.



Source: Calculated by the Authors using the EDHS, 2005

The data also shows that there is a significant difference between poor and non poor women according to age at first marriage (p-value less than 0.0005) Only 43 percent of women in the second quintile and above were married at age (15- 19) years, increased to 59 percent among poor women. Number of woman's ever born children has also a significant relationship with her asset poverty status, where 34 percent of poor women have (2- 3) children, compared to 46 percent of non-poor women. Poor women have a relatively larger number of children than non-poor women.



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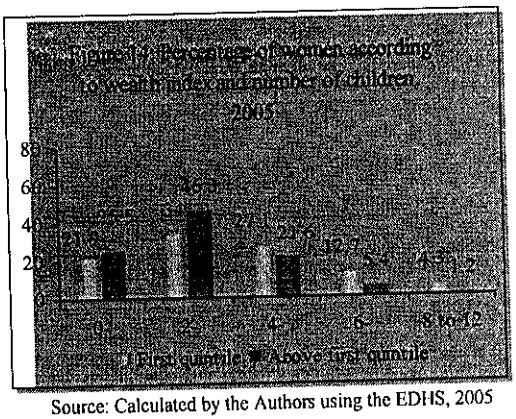

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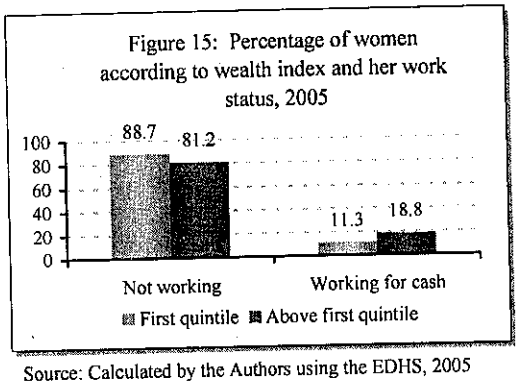


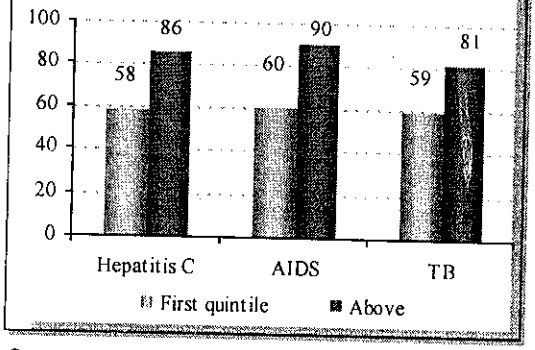
Source: Calculated by the Authors using the EDHS, 2005

Working status of woman (working for cash) has also a significant relationship with wealth index for women. About 11 percent of women in the first quintiles are not working for cash, increased to 19 percent among women in the non poor quintiles. Moreover, there is a significant difference between poor and non poor women according to occupational status of their husbands, especially for those

married to husbands working in professional, technical and managerial jobs and in agricultural job, where 39 percent of the poor women have been married to husbands working in such kind of jobs, decreased to 11 percent of non-poor women.

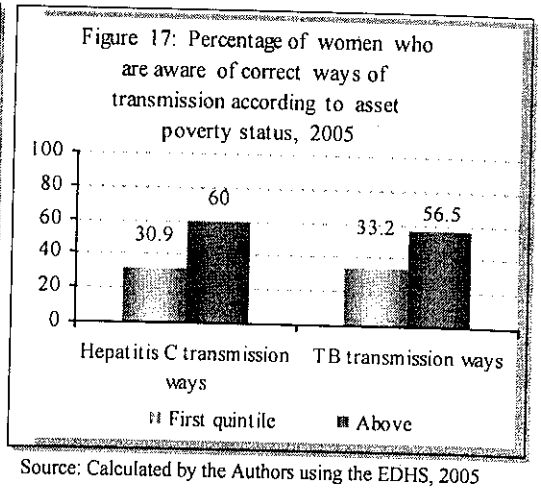
Regarding women's awareness of different infectious diseases, the results show that there is a significant relationship between the awareness of the three diseases, their ways of transmission and the asset poverty status. Slightly more than half of women in the first quintile of asset index know about hepatitis C, while this percentage increased to 86 percent among the non-poor women. Same results were observed regarding other infectious diseases. With respect to the correct ways of transmission of the three diseases, the data shows that there is a significant relationship between the knowledge of the ways of transmission and the quintiles of the asset index. About 31 percent of women in the first quintile who ever heard of hepatitis C could correctly identify at least on way of correct ways of transmission of hepatitis C, increased to 60 percent of women in the non poor quintiles. Same results were observed regarding correct ways of transmission of TB.

Figure 16: Percentage of women knowing about infectious diseases according to asset poverty status, 2005



Source: Calculated by the Authors using the EDHS, 2005

Figure 17: Percentage of women who are aware of correct ways of transmission according to asset poverty status, 2005



Source: Calculated by the Authors using the EDHS, 2005

According to the previous relations, asset poverty has a stronger relationship than expenditure-based poverty with all women's characteristics. This could be interpreted according to previous literatures, which state that expenditure-based poverty measures the economic poverty, while the asset poverty is a welfare measure and an indicator for household's economic stability and its ability to invest and provide for a better future [9]. In addition, poverty estimates from available surveys (or census) and applied on surveys with no data about households' expenditures do have standard errors associated with them and these are not small in size [11].

3.3 Relation between Expenditure-based Poverty and Asset Poverty

To investigate to what extent the expenditure-based poverty associates with the asset poverty; Table 1 presents the distribution of women in EDHS according to both the quintiles of wealth index and the quintiles of the estimated expenditures. The correlation coefficient computed from this table is 0.9 which implies a strong positive relation between these two variables. Accordingly, it can be said that ***there is a very strong degree of agreement between these two measures since the expenditure-based poverty depends on all variables of the asset poverty in addition to some variables related to household head, household's education and composition.*** Almost 60 percent of women in rural areas are in the poorest quintile according to the asset index, and are also

categorized in the poorest quintile according to monetary definition. In contrast, about three quarters of women in urban areas, and also on total Egypt, who are categorized in the richest quintile according to expenditure-based definition are also categorized in the richest quintile according to asset definition. Accordingly, women who are rich by monetary definition they are rich also by asset definition.

Looking to the "Total" column percentages presented in Table 1 for urban areas, the data shows that regardless of the expenditure-based poverty quintile, most women (74 percent) categorized in the highest two quintiles according to asset index. The situation is reversed regarding women in rural areas, where most women are concentrated in the poorest three quintiles of the asset index. As a result, asset index represents the long-term welfare.

Accordingly, as the relationship between the asset poverty and the expenditure-based poverty is very strong, and the relation of asset poverty with all other characteristics is much stronger than the expenditure-based poverty, the study can rely only on the asset poverty to assess the impact of poverty and other related variables on women's awareness of infectious diseases and their ways of transmission. ***For that reason, if the available survey does not provide any data about income or expenditure, one can rely on the asset poverty to investigate the impact of poverty on any phenomenon.***

Table 1: Distribution of women according to wealth index and expenditure-based poverty level by place of residence, 2005

Asset Poverty (Wealth index)	Consumption – based Poverty level											
	1st Q	2nd Q	3rd Q	4th Q	5th Q	Total	1st Q	2nd Q	3rd Q	4th Q	5th Q	Total
	Row percentage					All Egypt	Column percentage					
Poorest	63.2	22.4	8.9	4.3	1.2	100	59.2	20.3	7.6	3.5	1.0	17.3
Poor	29.0	38.2	21.0	9.0	2.8	100	30.8	39.3	20.0	8.4	2.6	19.6
Middle	8.6	28.4	35.4	20.8	6.8	100	9.5	30.2	35.4	20.1	6.5	20.3
Rich	0.5	8.9	32.4	42.1	16.2	100	0.6	10.0	34.5	43.2	16.5	21.6
Richest	0.0	0.2	2.1	24.6	73.2	100	0.0	0.2	2.2	24.7	73.3	20.6
Total	18.5	19.1	20.3	21.0	21.1	100	100	100	100	100	100	100
	Urban											
Poorest	53.1	27.2	12.8	5.6	1.3	100	43.0	11.3	2.6	0.8	0.1	3.9
Poor	25.7	35.9	25.1	10.8	2.6	100	36.6	26.2	9.0	2.8	0.5	6.9
Middle	6.3	23.9	42.6	21.9	5.4	100	19.1	37.3	32.6	12.0	2.0	14.8
Rich	0.2	7.6	33.3	43.1	15.8	100	1.3	24.6	52.7	48.8	12.3	30.6
Richest	0.0	0.1	1.4	22.1	76.4	100	0.0	0.7	3.1	35.6	85.1	43.7
Total	4.9	9.5	19.3	27.1	39.3	100	100	100	100	100	100	100
	Rural											
Poorest	64.2	21.9	8.5	4.1	1.2	100	61.2	22.7	10.9	6.7	4.0	26.9
Poor	29.6	38.6	20.3	8.7	2.9	100	30.1	42.7	27.7	14.9	10.0	28.7
Middle	9.6	30.4	32.3	20.3	7.4	100	8.2	28.4	37.2	29.5	22.0	24.2
Rich	0.9	10.6	31.2	40.5	16.7	100	0.5	6.2	22.5	36.8	30.9	15.1
Richest	0.0	0.2	6.7	39.8	53.3	100	0.0	0.0	1.6	12.1	33.1	5.1
Total	28.2	25.9	21.0	16.7	8.2	100	100	100	100	100	100	100

Source: Calculated by the Authors using the EDHS, 2005

4. Determinants of Women's Awareness of Infectious Diseases

In this section, multivariate analysis technique is used to further examine the determinants of women's awareness of infectious diseases and their correct ways of transmission. The logistic regression model is used to assess the impact of asset poverty and other related variables on the dependent variables (awareness of infectious diseases). Modeling the determinants of being aware of such diseases allow predicting the impact of changes in the factor under consideration, keeping all other factors constant. The explanatory variables used in the regression include most household characteristics that are not included in constructing the wealth index, in addition to women's characteristics as well as the asset poverty (wealth index). Accordingly, the explanatory variables include the wealth index, household characteristics (household size, gender of household head, region and place of residence), women characteristics (age, educational level, work status, age at first marriage, number of ever born children, and exposure to mass media (reading newspaper, listening to radio, and watching television)), husband's characteristics (educational level, work and occupational status). New binary variables are built to represent the categories of all categorical variables; these new variables take zero for non existence and one for existence. The wealth index is used in the analysis with the all five quintiles to facilitate monitoring variation among women from one category to another.

4.1 Awareness of Hepatitis C and its correct ways of transmission

Logistic regression model is estimated using the Forward Stepwise Technique to select the significant variables that affect the awareness of hepatitis C. The results of the estimated logistic regression model (see Table 2) show that the most significant variable on women's awareness of hepatitis C is the educational level of woman, where women who have university education and above are more likely to be aware of hepatitis C by 13 times than uneducated women. Asset poverty (wealth index) has a clear impact on women's knowledge, where richest women are more likely to be aware of hepatitis C by about 3 times than the poorest women after controlling all other factors. Current age of woman is considered also one of the main determinants of women's awareness of such disease, since older women (aged 30- 49 years) are more aware of the disease by about 3 times than younger ones (aged less than 20 years). Exposure to mass media has a significant impact on the awareness of the disease, where women who are reading newspaper at least once a week are more likely to know about hepatitis C by 2 times than women who are not reading newspaper. Additionally, women who are watching TV at least once a week are more likely to be aware of the disease by about 40 percent than those who are not watching TV. The Same result was observed for those who listen to the radio.

Moreover, place of residence has a significant impact on women's awareness, since women who live in urban areas are more likely to be aware of the HCV by almost 30 percent than women in rural areas. Additionally, women in Lower Egypt are less aware by the Hepatitis C than those in Metropolitan areas. However, the results show that women in Upper Egypt are more aware by HCV than Metropolitan areas by 20 percent. This could be attributed to the fact that women in Upper Egypt may hear about the disease but they do not know anything about it, particularly its ways of transmission. This fact confirmed by the odds ratio of the ways of transmission, where the awareness of the correct ways of transmission decreased by almost 30 percent among those in Upper Egypt compared by women in Metropolitan areas. Regarding

the educational level and occupational status of woman's husband, the results show that they are positively affecting women's awareness of such disease, where women married to husbands having university education and above, and also those married to husbands working in professional, managerial and technical jobs are more likely to be aware of hepatitis C by about 30 percent than other women. Gender of household head is one of the determinants of women's awareness, where women who are living in households headed by male are more likely to be aware of hepatitis C than women who are living in female-headed households. However, woman's work status, age at first marriage and household size has insignificant impact on women's awareness of such disease.

To sum up, the main determinants for women's awareness of HCV are the educational level, wealth index, current age of woman, exposure to mass media, number of ever born children, place of residence, and husband's educational level and occupational status.

For the awareness of correct ways of transmission of hepatitis C, the results show that the most significant determinants of women's awareness of ways of transmission are wealth index, educational level of woman, her current age, watching television, listening to radio at least once a week, getting married at age (30- 49) years, working for cash, educational level of her husband, and region. On the contrary of awareness of the disease itself, place of residence, gender of household head and work status of husband have insignificant impact on awareness of correct ways of transmission of hepatitis C.

Table 2: Logistic Regression results of awareness of hepatitis C and its correct ways of transmission

Socioeconomic characteristics	Awareness of Hepatitis C			Awareness of Correct Ways of Transmission		
	Coefficient	P- value	Odds ratio	Coefficient	P- value	Odds ratio
Place of residence: Rural (Ref.) Urban areas	0.240	*	1.271			
Read newspaper (No = Ref.)	0.656	*	1.927	0.256	*	1.291
Listen radio (No = Ref.)	0.320	*	1.377	0.517	*	1.677
Watch TV (No = Ref.)	0.314	*	1.370	0.649	*	1.914
Work status of woman: Not working (Ref.)	NS	NS	NS	0.432	*	1.540
Gender of household head Male headed (Ref.)	-0.155	0.031	0.856	NS	NS	NS
Household size	NS	NS	NS	0.029	*	1.030
Region						
Metropolitan areas (Ref.)						
Lower Egypt	-0.155	0.078	0.856	-0.135	0.012	0.874
Upper Egypt	0.193	0.027	1.213	-0.382	*	0.682
Wealth index						
Poorest (Ref.)						
Poorer	0.451	*	1.569	0.274	*	1.315
Middle	0.532	*	1.702	0.537	*	1.711
Richer	0.974	*	2.649	0.562	*	1.754
Richest	1.148	*	3.152	0.725	*	2.064
Educational level of woman						
No education (Ref.)						
Incomplete primary	0.288	*	1.334	-0.072	NS	0.930
Complete primary	0.196	0.034	1.216	0.240	0.009	1.271
Incomplete secondary	0.795	*	2.215	0.339	*	1.404

Socioeconomic characteristics	Awareness of Hepatitis C			Awareness of Correct Ways of Transmission		
	Coefficient	P- value	Odds ratio	Coefficient	P- value	Odds ratio
Complete secondary	1.397	*	4.041	0.565	*	1.760
Higher	2.549	*	12.798	0.782	*	2.186
Current age of woman						
15- 19 years (Ref.)						
20- 29 years	0.489	*	1.631	0.539	*	1.714
30- 49 years	0.991	*	2.695	0.678	*	1.969
Age at first marriage						
Less than 15 years (Ref.)						
15- 19 years	NS	NS	NS	0.076	NS	1.079
20- 29 years	NS	NS	NS	0.211	0.005	1.235
30- 49 years	NS	NS	NS	0.517	0.001	1.676
Number of ever born children						
0- 3 children (Ref.)						
4- 7 children	-0.111	0.030	0.894	-0.124	0.010	0.884
8- 12 children	-0.480	*	0.618	-0.280	0.092	0.756
Educational level of husband						
No education (Ref.)						
Incomplete primary	0.146	0.015	1.157	-0.156	0.016	0.855
Complete primary	0.077	NS	1.080	-0.005	NS	0.995
Incomplete secondary	0.126	0.070	1.134	-0.070	NS	0.932
Complete secondary	0.193	0.004	1.213	0.069	NS	1.071
Higher	0.239	0.074	1.270	0.341	*	1.406
Husband's occupational status						
Not working (Ref.)						
Professional, technical, managerial	0.272	0.021	1.313	NS	NS	NS
Clerical	0.093	NS	1.097	NS	NS	NS
Sales and services	-0.084	NS	0.920	NS	NS	NS
Agricultural	-0.067	NS	0.935	NS	NS	NS
Skilled manual	0.007	NS	1.007	NS	NS	NS
Unskilled manual	0.001	NS	1.001	NS	NS	NS
Constant	-1.102	*	0.332	-2.241	*	0.106

Source: Calculated by the Authors using the EDHS, 2005
*: Less than 0.0005 NS: Not significant

4.2 Awareness of AIDS

Logistic Regression model is estimated to assess the impact of asset poverty and other variables on the awareness of AIDS. The results, shown in Table 3, indicate that the most effective variable that has an impact on women's awareness of AIDS is the educational level of the woman, where women who have university education and above are more likely to know about AIDS by 16 times than uneducated women. Wealth index has a very strong impact on women's awareness of AIDS, where richest women are more likely to know about AIDS by about 5 times than poorest women. Exposure to mass media has a significant impact on women's awareness of AIDS. Women who watch TV at least once a week are more likely to know AIDS by 2 times than women who do not watch TV. Reading newspapers at least once a week increases women's awareness by about 60 percent than those who do not read newspaper.

Place of residence represents one of the determinants of women's awareness of AIDS, where women in the urban areas are more likely to be aware of the diseases by about 50 percent than those who live in the rural areas. Regarding the region, the results show that moving from metropolitan areas to Upper Egypt decreases women's awareness of the disease by about 40 percent. Number of ever born children has a significant negative impact on women's awareness of AIDS, since women who have more than 7 children are less likely to be aware of the disease by about 40 percent than women who have only 3 children or less. Regarding the educational level of husbands, the results show that it is an important factor, since women married to husbands who have completed primary level of education and have some secondary are more likely to be aware of the disease by 60 percent than women with uneducated husbands. Also age at first marriage and occupational status of husbands have significant impact on women's awareness of such disease. The data shows also that women married to husbands worked in agriculture sector are less likely to know about the disease than those married to not working husbands, since nearly all who worked in agriculture are uneducated compared to those who not work that may have some education that affect their awareness.

To sum up, older non poor women in urban areas who completed a university education or above, exposed to mass media, having small number of children, and have been married to well educated husbands are aware of AIDS.

Table 3: Logistic Regression results of awareness of AIDS

Socioeconomic characteristics	Awareness of AIDS		
	Coefficient	P- value	Odds ratio
Type of place of residence: Rural (Ref.)	0.383	*	1.466
Read newspaper : No (Ref.)	0.466	0.004	1.593
Listen radio : No (Ref.)	0.191	*	1.211
Watch TV: No (Ref.)	0.653	*	1.922
Region			
Metropolitan areas (Ref.)			
Lower Egypt	-0.254	0.035	0.776
Upper Egypt	-0.472	*	0.624
Wealth index			
Poorest (Ref.)			
Poorer	0.485	*	1.625
Middle	0.599	*	1.821
Richer	1.080	*	2.944
Richest	1.674	*	5.332
Educational level of woman			
No education (Ref.)			
Incomplete primary	0.466	*	1.594
Complete primary	0.609	NS	1.838
Incomplete secondary	1.214	*	3.366
Complete secondary	1.979	*	7.234
Higher	2.795	*	16.362
Current age of woman			
15- 19 years (Ref.)			
20- 29 years	0.432	*	1.540
30- 49 years	0.614	*	1.847

Socioeconomic characteristics	Awareness of AIDS		
	Coefficient	P- value	Odds ratio
Age at first marriage			
Less than 15 years (Ref.)			
15- 19 years	-0.064	NS	0.938
20- 29 years	0.015	NS	1.015
30- 49 years	-0.497	0.018	0.608
Number of ever born children			
0- 3 children (Ref.)			
4- 7 children	-0.234	*	0.791
8- 12 children	-0.526	*	0.591
Educational level of husband			
No education (Ref.)			
Incomplete primary	0.294	*	1.342
Complete primary	0.283	0.002	1.327
Incomplete secondary	0.487	*	1.628
Complete secondary	0.458	*	1.581
Higher	0.399	0.017	1.490
Husband's occupational status			
Not working (Ref.)			
Professional, technical, managerial	0.053	NS	1.054
Clerical	-0.269	NS	0.764
Sales and services	-0.125	NS	0.883
Agricultural	-0.260	0.015	0.771
Skilled manual	0.145	NS	1.156
Unskilled manual	-0.041	NS	0.960
Constant	-0.591	0.004	0.554

Source: Calculated by the Authors using the EDHS, 2005
*: Less than 0.0005 NS: Not significant

4.3 Awareness of Tuberculosis (TB) and its correct ways of transmission

Regarding the awareness of TB, the results of the Multivariate Logistic Analysis present the significant impact of the wealth index as well as the other related variables on the awareness of TB and it's correct ways of transmission among ever married women (15- 49) as shown in Table 4. The results show that the educational level of woman is the most important determinant of women's awareness of TB, compared to the other factors, where women who have completed a university education or above are more likely to be aware of TB by 4.5 times than uneducated women. Asset poverty has a positive significant impact on women's awareness of TB. Women living in the richest households are more likely to know about TB by 2 times than those who are living in the poorest households.

Current age of woman is one of the main determinants of her awareness, where old women (aged 30 years or above) are more likely to be aware of TB by about 2 times than younger ones (aged less than 20 years). Also getting married from a highly educated husbands, increases probability of women to be aware by about 60 percent, compared to those who married to uneducated husbands. Watching TV at least once a week increases woman's chances of being aware by TB as much as 60 percent compared to those who do not watch TV. Living in Lower Egypt decreases women's awareness of such disease by about 50 percent compared by those who live in

metropolitan areas. Additionally, most of the categories of occupational status of husbands are not significant.

The results of the logistic regression model regarding the awareness of correct ways of transmission of TB (see Table 4) show that the asset poverty is the most effective factor determining women's awareness of ways of transmission of TB. The findings also indicate that women are more likely to be aware of the correct ways of transmission if they reach university education or above, watch TV, listen to radio at least once a week, get married at age (30- 49) years, work for cash, being married to husbands working as agricultural or skilled or unskilled manual jobs and living in metropolitan areas.

To sum up, older non poor women in metropolitan areas who completed a university level of education or above, exposed to mass media, got married at old age, and have been married to well educated husbands are aware of TB and its correct ways of transmission.

Table 4: Logistic Regression results of the awareness of TB and its correct ways of transmission

Socioeconomic characteristics	Awareness of TB			Awareness of Correct Ways of Transmission		
	Coefficient	P- value	Odds ratio	Coefficient	P- value	Odds ratio
Read newspaper: No (Ref.)	NS	NS	NS	0.294	*	1.342
Listen radio: No (Ref.)	0.164	*	1.179	0.502	*	1.651
Watch TV: No (Ref.)	0.486	*	1.626	0.501	*	1.650
Work status of woman: No (Ref.)	NS	NS	NS	0.284	*	1.329
Household size	NS	NS	NS	0.026	*	1.027
Region						
Metropolitan areas (Ref.)						
Lower Egypt	-0.747	*	0.474	-0.330	*	0.719
Upper Egypt	-0.001	NS	0.999	-0.271	*	0.762
Wealth index						
Poorest (Ref.)						
Poorer	0.365	*	1.440	0.269	*	1.309
Middle	0.523	*	1.688	0.497	*	1.643
Richer	0.887	*	2.427	0.548	*	1.729
Richest	0.884	*	2.420	0.738	*	2.092
Educational level of woman						
No education (Ref.)						
Incomplete primary	0.105	0.066	1.111	-0.204	0.002	0.815
Complete primary	0.362	*	1.436	0.128	NS	1.137
Incomplete secondary	0.555	*	1.742	0.066	NS	1.068
Complete secondary	0.960	*	2.612	0.262	*	1.300
Higher	1.515	*	4.548	0.665	*	1.945
Current age of woman						
15- 19 years (Ref.)						
20- 29 years	0.309	*	1.362	0.174	0.078	1.190
30- 49 years	0.656	*	1.926	0.270	0.007	1.310
Age at first marriage						
Less than 15 years (Ref.)						
15- 19 years	NS	NS	NS	0.085	NS	1.089

Socioeconomic characteristics	Awareness of TB			Awareness of Correct Ways of Transmission		
	Coefficient	P- value	Odds ratio	Coefficient	P- value	Odds ratio
20- 29 years	NS	NS	NS	0.211	0.004	1.235
30- 49 years	NS	NS	NS	0.814	*	2.257
Educational level of husband						
No education (Ref.)						
Incomplete primary	0.024	NS	1.025	-0.089	NS	0.915
Complete primary	0.011	NS	1.011	0.035	NS	1.035
Incomplete secondary	0.127	0.053	1.136	-0.050	NS	0.951
Complete secondary	0.193	0.002	1.213	0.111	0.083	1.117
Higher	0.480	*	1.616	0.343	*	1.409
Husband's occupational status						
Not working (Ref.)						
Professional, technical, managerial	0.030	NS	1.031	0.085	NS	1.089
Clerical	0.039	NS	1.040	0.184	0.087	1.202
Sales and services	-0.188	0.047	0.828	0.125	NS	1.133
Agricultural	-0.217	0.019	0.805	0.353	0.000	1.424
Skilled manual	-0.120	NS	0.887	0.171	0.045	1.186
Unskilled manual	-0.012	NS	0.988	0.294	0.003	1.342
Constant	-0.423	0.008	0.655	-1.779	*	0.136

Source: Calculated by the Authors using the EDHS, 2005
*: Less than 0.0005 NS: Not significant

5. Conclusion and Policy Implications

5.1 Conclusion

The main objective of this study is to assess the impact of poverty on women's awareness of some infectious diseases and their correct ways of transmission. There are two approaches for measuring poverty namely; monetary (expenditure-based) poverty and non-monetary (asset) poverty. According to the results of the study, it is found that the two types of poverty have significant relationships with women's characteristics as well as their awareness of infectious diseases. However, the asset poverty, which measures the wellbeing, has a stronger relationship with all characteristics than expenditure-based poverty. Accordingly, if the available survey does not provide data about income or expenditure, one can rely on the asset poverty to investigate the impact of poverty on any phenomenon.

Most women in urban areas are categorized in the highest two quintiles according to asset index. The situation is reversed regarding women in rural areas, where most women are concentrated in the poorest three quintiles of the asset index, which represents the long-term welfare.

The main determinants for women's awareness of HCV are the educational level, wealth index, current age of woman, exposure to mass media, number of ever born children, place of residence, and husband's educational level and occupational status.

Older non-poor women in urban areas who completed a university education or above, exposed to mass media, having small number of children, and married to well-educated husbands are aware of AIDS. Older non poor women in metropolitan areas who completed a university level of education or above, exposed to mass media, married at old age to well educated husbands are aware of TB and its correct ways of transmission.

5.2 Policy Implications

Based on the findings of this study, considerable improvements can be made for women's knowledge of different infectious diseases and their correct ways of transmission. The following approaches could be considered:

1. Improving the educational status of women particularly in rural areas by increasing the literacy classes in most villages.
2. Increasing the awareness and knowledge of women by different infectious diseases and their correct ways of transmission through different mass media, particularly in television.
3. Targeting women in Lower Egypt for increasing their awareness and knowledge of different infectious diseases and their correct ways of transmission.
4. Increasing the awareness and knowledge of women by different infectious diseases and their correct ways of transmission through the ***Raida Refia*** who visit most women in their houses in rural areas.
5. Teaching the correct ways of transmission of most infectious diseases in schools especially in primary education.
6. Increasing the awareness about the correct ways of transmission of most infectious diseases in health facilities in rural areas emphasizing that transfer is possible by re-use the syringes or by contact with infected blood.

References

1. Armanious, D. M. (2000), Statistical Multivariate Analysis of the Characteristics of Poor in Egypt, unpublished Ph.D. thesis, Department of Statistics, Cairo University, Egypt.
2. Caner, A. and Wolff, E. N. (2002), " Asset Poverty in the United States: Its Persistence in an Expansionary Economy", Public Policy Brief, The Levy Economics Institute.
3. Caner, A. and Wolff, E. N. (2002), " Asset Poverty in the United States, 1984–1999: Evidence from the Panel Study of Income Dynamics", Levy Economics Institute and New York University.
4. Carter, M. R. and Parrett, C. B. (2004), "The Economic of Poverty Traps and Poverty Persistent: An Asset-Based Approach", the BASIS Collaborative Research Support Program, the Department of Agriculture and Applied Economics, University of Wisconsin-Madison, USA.
5. Central Agency of Public Mobility and Statistics (CAPMAS) (2004/2005), Household Income, Expenditure and Consumption Survey [HIECS, 2005], Cairo, Egypt.
6. El-laithy, H. (2001), "The Gender Dimensions of Poverty in Egypt", Economic Research Forum and World Bank, working paper 0127.
7. El-laithy, H., Lokshin, M., and Banerji, A. (2003), "Poverty and Economic Growth in Egypt, 1995-2000", The World Bank, Policy Research Working Paper Series, paper No. 3068.
8. El-Zanaty, F. and Way, A. (2006) "Egypt Demographic and Health Survey 2005" [EDHS, 2005], Ministry of Health and Population, National Population Council, El-Zanaty and Associates, and ORC Macro, Cairo, Egypt.
9. Fisher, M. G. and Weber, B. A. (2004), "Does Economic Vulnerability Depend On Place Of Residence? Asset Poverty Across the Rural-Urban Continuum", Rural Poverty Research Center, of the Rural Policy Research Institute, Columbia, Missouri.
10. Haveman, R. and Wolff, E. N. (2001), "Who are the Asset Poor? Levels, Trends and Composition, 1983-1998", Institute for Research on Poverty, University of Wisconsin, Madison, Discussion Paper 1227-01
11. Hentschel, J., Lanjouw, J.O., Lanjouw, P., and Poggi, J. (1998), "Combining Census and Survey Data to Study Spatial Dimensions of Poverty", The World Bank, Policy Research Working Paper Series, paper No. 1928.
12. Kingdon, G. G., and Knight, J. (2004), "Well-being Poverty versus Income Poverty and Capabilities Poverty in South Africa?", Global Poverty Reduction Group, Centre for the Study of African Economies, University of Oxford, United Kingdom.
13. Lawson, D. (2004), "Health, Poverty and Poverty Dynamics in Africa", Paper for IV Mediterranean Seminar on International Development, University of Manchester, Manchester, United Kingdom.

14. Oliver, M. L., and Shapiro, T. M. (1990), "Wealth of a Nation: At Least One Third of Households are Asset-Poor." The American Journal of Economics and Sociology 49: 2 (April): 129-50.

15. Pallikadavath, S., Sanneh, A., Mcwhirter, J. M., and Stones R. W. (2005), " Rural women's knowledge of AIDS in the higher prevalence states of India: reproductive health and socio-cultural correlates", Health Promotion International, Oxford University Press, Vol. 20 No. 3, 249- 259.

16. Rowson, M. (2001), "Poverty and Health", Student BMJ, 9, 180-182.

17. Sierminska, E., Brandolini, A. and Smeeding, T. (2006), " Luxembourg Wealth Study", Retirement Research Consortium, United States Social Security Administration, Working Paper No. 2.

18. UN (2002), "Reporting on the Millennium Development Goals at the Country level: Egypt", Public Administration Research and Consultation Center (PARC), Cairo, Egypt.

19. UNDP (1997), "Human Development Report 1997", United Nations Development Program and Oxford University Press, New York.

20. UNDP (2003), "Subjective Poverty and Social Capital: towards a comprehensive strategy to reduce poverty", United Nations Development Program, Cairo, Egypt.

21. UNDP (2005), "Human Development Report 2005", United Nations Development Program, New York, USA.

22. UNIDS/WHO (2006), "AIDS Epidemic Update", Joint United Nations Program on HIV/AIDS and World Health Organization, Geneva, Switzerland.

23 World Bank (2004), "Arab Republic of Egypt: A Poverty Reduction Strategy for Egypt", the Ministry of Planning in collaboration with Social and Economic Development Group, Middle East and North Africa Region, The World Bank, Report No. 27954-EGT.

24. World Bank (2007), "Poverty Assessment Update 2000 -2005", Arab Republic of Egypt, Sustainable Development Department, Middle East & North Africa Region, The World Bank, Report No. 41178-EGT.

25. WHO (1999), "Infectious Diseases Report", the World Health Organization, Geneva, Switzerland.

26. WHO (2000), "Hepatitis C: global prevalence (update)", Weekly Epidemiological Record, The World Health Organization, Geneva, Switzerland.

27. WHO (2002), "World Health Report: Reducing Risks, Promoting Healthy Life", The World Health Organization, Geneva, Switzerland.

28. WHO (2007), "World Health Report: Global Tuberculosis Control: Surveillance, Planning, Financing", The World Health Organization, Geneva, Switzerland.