

Disability and Healthcare Utilization: Does the Type of Disability Matter?

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ABSTRACT

Existing literature confirms the presence of inequality between abled and disabled persons. This study contributes to the body of knowledge by going a step further to conclude that even if resources and other factors are equally distributed between abled and disabled persons, just being in a state of disability reduces healthcare utilization. However, this conclusion differs across the types of disability. The study investigates the effect on healthcare utilization of the types of disability, within the theoretical framework of the Capability Approach. The study uses data from the seventh round of the Ghana Living Standards Survey (GLSS 7) and employs the estimation method of Propensity Score Matching (PSM). The findings are that there is inequality in the resources and conversion factors needed to utilize healthcare. After matching these background characteristics and making sure that all the types of providers are available, disability reduces healthcare utilization by 12.4%. This result differs across the types of disabilities. The average treatment effect of sight, physical, and emotional disabilities on healthcare utilization decreased by 2.9%, 0.7%, and 4.7% respectively. However, the average treatment effect increases by 12.3%, 24.5%, and 4.5% for persons with hearing, speech, and intellectual disabilities respectively, at a 5% significant level. After addressing the existence of inequality as enshrined in the Capability Approach, just being a disabled person decreases healthcare utilization. This finding changes from one type of disability to another.

Keywords: Disability, types, utilization, health

INTRODUCTION

Disability is defined as any physical, mental, emotional, or any form of impairment that substantially limits a person's life activities (Abdoli et al., 2018; Staetemans et al., 2017). In many ways, persons living with disability (PLDs) have been denied access to certain social, economic, and cultural programs and projects, partly due to their inability, and partly due to mere stigmatization (Beaulieu et al., 2017; Bingham & O'Brien, 2018). It is only a natural phenomenon that everybody including persons living with a disability gets stricken with ill health. This paper investigates how disabled persons seek treatment when ill, within the context of Amartya Sen's Capability Approach (CA). The Capability Approach defines certain factors or variables that play special roles in an individual's desire to improve their welfare (Sen, 1999). The study will critically examine how the variables, as defined within the CA, will contribute to the effect of the types of disability on healthcare utilization.

There is documented evidence of PLDs suffering from stigma at health facilities ranging from denial of care, provision of sub-

standard care, physical and verbal abuse, to more subtle forms, such as making people wait longer (Govindasamy et al., 2014; Storla et al., 2008). This practice of stigma at health facilities undermines diagnosis, treatment, and health outcomes (Blixen et al., 2016; Katz, 2012; UNAIDS, 2000). Other papers looked into the socio-economic determinants of healthcare-seeking behavior of persons living with disability (Babu et al., 2021; Talukdar et al., 2018; Zandam et al., 2019).

This paper aims to contribute to knowledge by emphasizing the constraints of healthcare utilization by all types of disabilities within the context of the Capability Approach.

The Capability Approach

The Capability Approach (CA) framework helps to understand how individuals can utilize the available opportunities to live the kind of lives they so desire. In the framework are four main stages to this realization. Applying the concept to this study, we define each stage as:

The endowment is the means to achieve. This refers to the initial resources available to the individual. CA addresses inequality in people's endowments (initial resources). In this case, the income of the consumer (consumer refers to the patient), price (price is considered a resource since it affects real income), and health insurance are identified as the resources needed to utilize healthcare.

Conversion factors: This refers to personal and contextual characteristics, mostly biological factors and certain attributes. For this study, they refer to personal factors such as age, education, and location of residence as well as attributes of a

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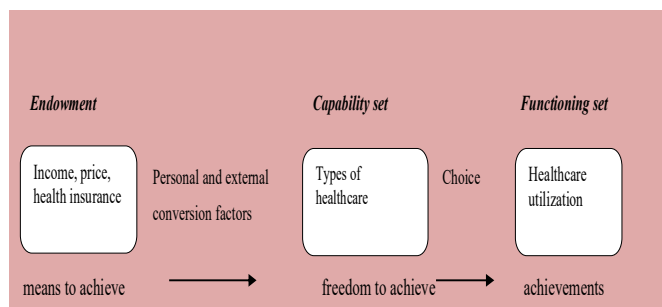
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healthcare provider such as travel cost, travel time, and waiting time.

Capability set is the freedom to achieve. Perhaps the capability set is the main focus of CA. It is what differentiates CA from other frameworks. It talks about the available opportunities or a set of options out of which an individual can choose from to be able to live their kind of desired life. These options are the various types of healthcare providers which include public, private, chemical stores, and medical alternatives.

Functioning is the achieved life: This is the desired life a person so desires and has achieved it / living it. The desired life here is for the person living with a disability to be able to utilize healthcare to treat the ailment. This is illustrated in Figure 1.

Figure 1: Capability Approach Framework



The capability Approach first admits the presence of inequality in the resources and conversion factors and addresses it. After addressing all forms of inequality, the CA then focuses on the availability of all possible sets of opportunities to live the desired life. Therefore, applying this concept to the study, the focus is on first addressing inequality in the resources and conversion factors between abled and disabled persons. The next stage is to identify the types of healthcare providers from which PLDs consult to cure their ailments. The final stage talks about constraints to healthcare utilization. After addressing inequality in the resources and conversion factors needed to utilize healthcare, and making sure that all types of healthcare providers are available, the only constraint to healthcare utilization will be the mere presence of disability types. This is the thrust of the paper.

METHODOLOGY

Data

The study uses a secondary dataset from the Ghana Statistical Service. It is the seventh round of the Ghana Living Standards Survey (GLSS 7) which was conducted in 2016/2017. The GLSS 7, like previous rounds, is a nationwide household survey designed to generate information on the living conditions in the country at the individual level ranging from, health, education, employment and time use, migration, tourism, housing, agriculture, access to finance and asset ownership. The data was collected by adopting a two-stage stratified sampling design. At the first stage, 1,000 enumeration areas (EAs) were selected to form the Primary Sampling Unit (PSUs, giving a sample size of 15,000 households and about 59,000 individuals. As part of the information collected, individuals were asked

information about their health status in the two weeks preceding the interview as reported in Section three (3) of Part A. It contains information on disability status and whether or not they suffered from illness, injury, or both, and whether they sought treatment. About 8,809 out of the sample size of about 59,864 household members, representing 14% reported having ill-health. This is the population of the study.

Model

The technique for this study is the Propensity Score Matching. It is preferred to other techniques because of its ability to resolve the issue of inequality by matching all the factors between abled and disabled persons. The formal treatment follows from the potential outcome approach or the Roy-Rubin Model [(Roy, 1951), Rubin (1974)] which was adopted by Caliendo and Kopeinig (2005). In this paper, the potential outcome refers to the utilization of healthcare, while treatment refers to disability. The main pillars of the model are individual, endowments, conversion factors, types of healthcare providers, constraints, and healthcare utilization. In simple terms, X represents all endowment and conversion factors wherein referred to as background characteristics (or covariates). Y is the outcome of healthcare utilization and T is the disability type. The propensity score is defined as the conditional probability of disability affecting utilization given the background characteristic X . In the case of a binary estimator, disability status, T_i is equal to 1 if the individual is disabled and 0 if otherwise. The potential outcome, healthcare utilization, is then given as $Y_i(T_i)$ for each individual i , where $i = 1, \dots, N$, and N denotes total population. The treatment effect can then be given as:

$$\pi_i = Y_i(1) - Y_i(0) \dots \dots \dots (1)$$

The presence of counterfactual outcomes does not make it possible to estimate the individual effects and therefore π_i concentrates on the average effect of disability on healthcare utilization.

The 'average treatment effect on the disability' (ATT) is then defined as:

$$\pi_{ATT} = E(\pi|T = 1) = E[Y(1)|T = 1] - E[Y(0)|T = 1] \dots \dots (2)$$

$E[Y(0)|T = 1]$ is the unobserved outcome or the counterfactual mean, which must be replaced using the mean outcome of the abled persons $E[Y(0)|T = 0]$ is not a good idea since components of it can determine healthcare utilization leading to the problem of selection bias. π_{ATT} can be noted as:

$$E[Y(1)|T = 1] - E[Y(0)|T = 0] = \pi_{ATT} + E[Y(0)|T = 1] - E[Y(0)|T = 0] \dots \dots \dots (3)$$

The difference between the left-hand side of equation (3) and π_{ATT} is the selection bias. The true parameter π_{ATT} is estimated only if:

$$E[Y(0)|T = 1] - E[Y(0)|T = 0] = 0 \dots \dots \dots (4)$$

The overall (total) average treatment effect is given by:

$$\pi_{ATE} = E[Y(1) - Y(0)] \dots \dots \dots (5)$$

Conditional Independence Assumption (CIA) states that with a given observable covariates X which are not affected by healthcare utilization, disability status is independent of healthcare utilization.

$$Y(0), Y(1) \perp T | X, vX(\text{unconfoundedness}) \dots \dots \dots (6)$$

Where \perp denotes statistical independence. The conditioning on all relevant covariates is limited in the case of a high-dimensional vector. The unconfoundedness of equation (6) is possible if the selection is based on observable background characteristics and that all variables that influence healthcare utilization and disability status are simultaneously observed by the researcher.

Rosenbaum and Rubin (1983) suggest using the so-called balancing scores. If potential suffering from a disability is independent of healthcare utilization conditional on background covariates X and also independent conditional on balancing score $b(X)$, then

$$P(X) = P(T = 1 | X) \dots \dots \dots (7)$$

Where equation (7) is the Propensity Score (PS).

Therefore, the Conditional Independent Assumption based on propensity score can be written as:

$$Y(0), Y(1) \perp T | P(X), vX \dots \dots \dots (8)$$

Another requirement besides the independence is what is called the common support or the overlap. This requirement rules out perfect predictability of T given X :

$$0 < P(T = 1 | X) < 1 \dots \dots \dots (9)$$

This means that an individual with the same X has a positive probability of being either disabled or abled.

Given that Conditional Independent and the Common Support assumptions hold, the Propensity Score estimator for ATT can be written as:

$$\pi_{ATT}^{PSM} = E_{P(X)|T=1} \{E[Y(1)|T = 1, P(X)] - E[Y(0)|T = 0, P(X)]\} \dots \dots \dots (10)$$

Put in words, the Propensity Score Matching (PSM) estimator is simply the mean difference in utilization over the common support, approximately weighted by the propensity score distribution of participants.

Put in simple econometrics form:

$$Y_i = \alpha + \beta T_i + \delta X_i + \varepsilon_i \dots \dots \dots (11)$$

Where Y_i is the healthcare utilization

α is the autonomous effects

T_i is the disability status dichotomized into disabled and abled, and later the disability types.

X_i is the background covariates which include the endowments (income, price, health insurance), personal characteristics (age, education, location of residence), and attributes of provider (travel cost, travel time, and waiting time).

ε_i is the error term.

A full description of all the variables is given in Appendix 1.

RESULTS

Descriptive Statistics

The results show that about 1.26% of the respondents indicate that they have some form of disability. The respondents who indicate that they have ill-health (suffered illness or injury or both) are 14.18% and those who consult a physician to treat the ailment are 53.32% of the sample. The situation is quite different among persons living with a disability where 28.31%

among them have suffered from an ailment in the two weeks preceding the interview, and only 42.86% of those who have an ailment consult a physician. But which type of provider do they consult? About 46.94% of the total sample do not consult. For those who seek healthcare, the majority of them get it from the public (26.69%), followed by private (15.15%), with the rest visiting the chemical store (9.74%) and medical alternative (1.48%).

Among the types of disability, physical disability dominates with about 44.29%, followed by sight and intellectual disabilities with 20.88% and 12.00% respectively. The remaining types of disability are hearing (9.89%), speech (9.17%), and emotional (3.77%). Based on the above statistics, it will be interesting to find out how ailment, decision to consult, and where consultation takes place as well as the personal characteristics differ across the types of disability. The results are shown in percentages, using the Pearson chi2 test. The observed difference should be significant at a 1% significant level as reported in Table 1.

From Table 1, the sample average refers to the total parentage among the disability group compared with abled persons. It is the benchmark upon which the comparison among the disability types is done with an emphasis on the type of disability whose percentage is higher than the average for the disability group.

The results show that the average percentage for persons living with disability who suffer from an ailment is 28.37%. The type of disability whose percentage is higher than the average is sight and physical with percentages of 30.85 and 33.15. This means that among the types of disability, sight and physical are more likely to suffer from ill-health. The disability percentage for those who consult physicians to treat their ailment is 42.86. The type of disability whose percentages are higher than the average is hearing (52.17%), speech (66.67%), and physical (42.89%). But where is the consultation taking place? More than half of persons living with disability consult from a public provider (52.94%), followed by a private provider (27.45%), chemical store (12.75%), and medical alternative (6.86%). However, there are observed differences among the types of disability. People suffering from physical and emotional disability are more likely to consult the public provider with percentages of 55.77 and 75.00 respectively. For private providers, it is only the physical disability that is likely to visit there with a percentage of 30.77. Those who are interested in consulting the chemical store are people with hearing (25.0%) and speech (37.5%) impairments. Only sight and intellectual disability seek treatment from the medical alternative provider with percentages of 18.18 and 25.0 respectively.

The personal characteristics also differ across the types of disability. It is likely to find hearing (17.78%), speech (26.39%), intellectual (23.75%), and emotional (18.42%) disabilities among children aged below 15 years. As for the youth (15-30), their common impairments are speech (27.78%), intellectual (25.0%), and emotional (18.42%). For disabled persons aged 31-45, the dominant impairments are speech

Table 1 Distribution of healthcare-seeking behavior and personal characteristics across the types of disability

Variables	Sight	Hearing	Speech	Physical	Intellectual	Emotional	Disability Average
Ailment status	Person chi2 (5) = 17.0680			Pr = 0.004			
Ill health	30.85	25.56	16.67	33.15	15.00	26.32	28.37
Good health	69.15	74.44	83.33	66.85	85.00	73.68	71.63
Consultation decision	Person chi2 (5) = 4.6624			Pr = 0.458			
Consult	37.93	52.17	66.67	42.89	33.33	40.00	42.86
Do not consult	62.07	47.83	33.33	57.72	66.67	60.00	57.14
Type of provider	Person chi2 (15) = 16.5887			Pr = 0.344			
Public	50.00	50.00	37.50	55.77	50.00	75.00	52.94
Private	22.73	25.00	25.00	30.77	25.00	25.00	27.45
Chemical store	9.09	25.00	37.50	9.62	0.00	0.00	12.75
Medical alt.	18.18	0.00	0.00	3.85	25.00	0.00	6.86
Age	Person chi2 (20) = 146.9378			Pr = 0.000			
0-14	4.26	17.78	26.39	9.43	23.75	18.42	12.40
15-30	11.17	10.00	27.78	13.75	25.00	18.42	15.26
31-45	10.64	12.22	27.78	21.02	37.50	28.95	20.26
46-59	21.81	21.11	11.11	16.98	10.00	18.42	17.40
60+	52.13	38.89	6.94	38.81	3.75	15.79	34.68
Sex	Person chi2 (5) = 1.4310			Pr = 0.921			
Male	54.26	48.89	54.17	54.72	57.50	55.26	54.23
Female	45.74	51.11	45.83	45.28	42.50	44.74	45.77
Education	Person chi2 (20) = 25.5153			Pr = 0.182			
No education	49.20	47.19	40.85	44.66	51.90	52.63	46.68
Primary	19.25	28.09	32.39	20.55	22.78	15.79	22.07
JSS/JHS/Middle	22.46	13.48	21.13	27.67	17.72	21.05	23.16
Secondary	4.28	5.62	5.63	5.21	3.80	7.89	5.07
Tertiary	4.81	5.62	0.00	1.92	3.80	2.63	3.02
Location	Person chi2 (5) = 25.4533			Pr = 0.000			
Urban	20.21	15.56	31.94	33.96	35.00	44.74	29.32
Rural	79.79	84.44	68.06	66.04	65.00	55.26	70.68

(27.78%), physical (21.02%), intellectual (37.50%), and emotional (18.42%). Except sight and hearing, all other types of impairments are found among all the age categories. Sight, hearing, and emotional disabilities dominate in the age category of 46-59 with percentages of 21.81, 21.11, and 18.42 respectively. For the older folks aged 60+, the common impairments are sight (52.13%), hearing (38.89%), and physical (38.81%).

In terms of sex, the dominant type of disability among males is the sight (54.26%), physical (54.72%), intellectual (57.50%), and emotional (55.26%). The remaining two impairments are dominant among females. These are hearing and speech with percentages of 51.11 and 45.83 respectively.

As far as educational qualification is concerned, among disabled persons with no educational qualification, the type of disabilities whose percentages are higher than the average are sight (49.20%), hearing (47.19%), intellectual (51.90%), and emotional (52.63%). Among the Primary educational qualification group, one is more likely to find hearing (28.09%), speech (32.39%), and intellectual (22.78%) impairments. The

only impairment for people with JSS/JHS/Middle qualification is physical (27.67%). The secondary education group is dominated by four types of disabilities. These are hearing, speech, physical and emotional with percentages of 5.62, 5.63, 5.21, and 7.89 respectively. For those with a tertiary qualification, the dominant disabilities are sight (4.81%), hearing (5.62%), and intellectual (3.80%). The location of residence is categorized into urban and rural. Whereas the dominant disabilities in the urban area are speech (31.94%), physical (33.96%), intellectual (35.00%), and emotional (44.74%), sight and hearing impairments are the most common in the rural area with percentages of 79.79 and 84.44 respectively. It must be noted that the variables with observed differences which are significant at 1% are ill health status, age, and location of residence.

In the Capability Approach theoretical framework, the first stage is to identify inequality in the endowments and conversion factors and correct it. After correcting the inequality, the second stage is to find all possible opportunities available for the disabled person to utilize healthcare. The third stage, after

finding all the possible capability sets, which are the places of consultation, the final stage is to find out if there is any constraint that will prevent an individual from utilizing healthcare. The estimation technique that will help achieve this purpose is the Propensity Score Matching (PSM). It first establishes the presence of inequality in the resources and conversion factors, with the abled person on one side and all forms of disability on another side. The PSM generates a probit regression where a variable with a positive (negative) coefficient means that variable is more (less) likely to be associated with disability than abled persons. Since none of the coefficients is zero (0), it can be concluded there is exists inequality in the endowment, and conversions factors between. This is shown in Table 2.

Table 2 Probit regression showing the presence of selection bias

Variable	Coefficient	95% Confidence Interval	Number of Observation = 4,896
Endowment			LR chi2 (13) = 642.01 Prob>chi2 = 0.0000 Pseudo R2 = 0.1355
Income	-0.197	(-0.481 0.875)	
Price	0.025	(-0.362 0.311)	
Health Insurance	-0.011	(-0.066 0.044)	
Conversion factors			
Waiting time	0.079***	(0.026 0.132)	
Travel time	0.050	(-0.016 0.115)	
Travel cost	0.097*	(-0.017 0.211)	
Age	0.433***	(0.395 0.472)	
Gender (with Male as reference category)			
Female	-0.158***	(-0.214 - 0.102)	
Education (with no education as reference category)			
Primary	-0.519***	(-0.589 - 0.450)	
JSS/JHS/Middle	-0.336***	(-0.408 - 0.264)	
Secondary	-0.621***	(-0.739 - 0.504)	
Tertiary	-0.510***	(-0.664 - 0.356)	
Location with Urban as reference category)			
Rural	0.044	(-0.017 0.106)	
Constant	-1.784***	(-1.863 - 1.705)	

*** 1% **5% *10%

There is a disparity in the endowment such that disabled persons are likely to have less monthly income, but pay more out of pocket because they have no health insurance. In terms of the disparity in the conversion factors with specific reference to the attributes of provider, persons living with disability are more likely to spend more money but less time to travel to the health facility. They wait longer at the health facility to receive

treatment. For inequality in the demographic factors, disabled persons are older, male, less educated, and live in rural areas.

Haven observed the presence of inequality in the endowment and conversion factors, the next stage is to match them between the abled and disabled groups such that each variable has an equal chance of being selected into either abled or disabled group. The Propensity Score Matching technique is properly set up with good common support of [0.005, 0.041]. The propensity score (in percentiles) together with the summary statistics of the model are reported in Table 3.

Table 3 This estimated propensity score in percentiles

	Percentiles	Smallest	
1%	0.005	0.005	
5%	0.007	0.005	
10%	0.007	0.005	Observations = 8,310
25%	0.008	0.005	Sum of Wgt. = 8,310
50%	0.012		Mean = 0.016
		Largest	Standard Deviation = 0.010
75%	0.019	0.041	
90%	0.029	0.041	Variance = 0.001
95%	0.040	0.041	Skewness = 0.564
99%	0.041	0.041	Kurtosis = 2.022

The PSM model has a total observation of 8,310, a mean of 0.016, a standard deviation of 0.010, and a variance of 0.00. This means that the data is well concentrated around the means and limits the number of outliers. The distribution is asymmetric and it is positively skewed (skewed to the right so that the right tail of the distribution is longer) since it has a skewness equal to +0.564. The kurtosis of 2.022 indicates that the distribution is relatively peaked and heavy-tailed.

The model has six (6) final blocks. This number of blocks ensures that the mean propensity score is not different for disabled and abled persons in each block. The model satisfies the balancing property. This means that in each block, the propensity scores are similar and that the endowments and conversion factors on which the matching is done are also similar. The results show the inferior bound, the number of disabled, and the number of abled for each block as shown in Table 4.

Table 4 The Number of Blocks in Propensity Score

Inferior blocks of score	of p	Disability status		Total
		Abled	Disabled	
0		371	19	390
0.006		4,328	301	4,629
0.013		786	93	879
0.019		312	50	362
0.025		1,129	252	1381
0.038		524	145	669
Total		7450	860	8,310

Note: In this case, the common support option has been selected
Source: Author's using GLSS 7

The PSM model estimates the nearest neighbor average treatment effect on healthcare utilization of each disabled unit and reports the bootstrapped standard errors. Bootstrapping also serves as the robustness check. The difference between the outcome on the disabled and the outcome on the abled after matching is interpreted as if someone is disabled, their likelihood of healthcare utilization will be changed by the ATT outcome. A positive (negative) outcome shows an increase (decrease) in healthcare utilization as illustrated in Table 5.

Table 5 Average Treated Effect of Disability on Healthcare Utilization

Dependent Variable	Number of disabled	Number of abled	ATT	Std. Error	t-value
Healthcare utilization	860	7450	-0.124	0.042	-3.713
Bootstrap statistics: Number of observations = 8310 Replications = 1000					
Variable	Reps	Observed	bias	Std. error	95% Confidence Interval
attn	1000	-0.064	0.005	0.017	[-0.159 0.031] (Normal) [-0.123 0.036] (Percentile) [-0.123 0.036] (Bias-corrected)
Dependent Variable	Number of disabled	Number of abled	ATT	Std. Error	t-value
Healthcare utilization	860	7450	-0.124	0.017	-3.517

The results from the Propensity Score Matching estimation technique with the nearest neighbor matching method indicate that after matching all the background characteristics, the average treated effect on the treated (ATT) is -0.124. This is interpreted as: disability decreases healthcare utilization by 12.4%. The focus of this study is to find out if the results are the same across all types of disability.

Table 6 Average Treated Effect of Disability Types on Healthcare Utilization

Dependent Variable	ATT	Std. Error	t-value
Sight	-0.029	0.042	-2.695
Hearing	0.123	0.059	2.055
Speech	0.245	0.064	3.353
Physical	-0.007	0.041	-0.168
Intellectual	0.045	0.062	1.920
Emotional	-0.047	0.090	-0.525

The effect on healthcare utilization differs from one type of disability to another. After matching all the resources and conversion factors, the average treatment effect on healthcare utilization remains negative for the person suffering from sight,

physical, and emotional with ATT of -0.029, -0.007, and -0.047 respectively. However, the ATT changes to positive for persons suffering from hearing, speech, and intellectual with ATT of 0.123, 0.245, and 0.045.

DISCUSSION

The Capability Approach (CA) framework has these as its main pillars: functioning, capability set, endowment, and conversion factors. Functioning in this case refers to the desired healthcare utilization whereas capability will be the types of healthcare. The constraint where refers to being a disabled person (maybe stigmatized). The Endowment which refers to the resources needed to reach the desired healthcare utilization is price, income, and health insurance. The Conversion factors are grouped into personal characteristics (age, sex, education, and location of residence) and the attributes of the healthcare provider (travel cost, travel time, and waiting time). The first part of the discussion is to examine the bivariate analysis and the second part discusses the Propensity Score Matching results.

The bivariate analysis shows that there is a disparity in the resources and background characteristics, with specific reference to the types of disability. The types of disability (in descending order in terms of percentages) are physical, sight, intellectual, hearing, emotional. The bivariate analysis reveals that each type of disability has a different ill health status and different healthcare-seeking behavior across all types of healthcare providers. People with sight and physical disabilities are more likely to suffer from the ailment. Individuals who have hearing, speech, and physical disabilities are more likely to consult a physician when ill. In terms of where to consult, persons suffering from physical disability prefer public and private providers, emotional consults public provider, hearing and speech visit chemical store provider, and intellectual visit medical alternative provider. People with sight impairment are more likely to suffer ill health, yet they are not likely to consult a physician unless it is the medical alternative, which is usually a specialized health facility. Perhaps, sight disabled persons visit there with the hope of getting cured of their impairment and not for general healthcare services. A similar analysis could be done for people suffering from an intellectual impairment since most of the mental health problems are believed to have been caused by evil spirits. There are instances, where persons with intellectual or mental disabilities are sent to the traditional healer, herbalist, prayer camp, or other spiritual healers instead of the psychiatric hospitals.

The results show that there are differences in each of the demographic factors across the types of disability. Speech and intellectual disabled persons are more likely to be young while sight and physical are older. Hearing and emotional impaired individuals are found across all age categories. The common disabilities among males are sight, physical, intellectual, and emotional, while hearing and speech disabilities are more likely to be found among females. People with sight, intellectual and emotional impairments are not likely to be educated, but once they start, they aim at the tertiary level. Physically impaired persons attend school up to at least the JSS/JHS/Middle level.

Hearing and speech disabled individuals are found across all levels of educational qualifications. While speech, physical, intellectual, and emotional are commonly found in the urban area, sight and hearing impairment are likely to be found in the rural area.

Based on the Capability Approach, the probit regression shows the presence of inequality in the endowments and conversion factors between abled and disabled persons. The PSM corrects this selection bias and produces a result that indicates that even if disabled persons have the same endowments and conversion factors as their abled counterparts, the mere fact that they are disabled decreases their healthcare utilization by 12.4%. This result changes from one type of disability to another. The average treatment effect on healthcare utilization decreases for sight, physical, and emotional by 2.9%, 0.7%, and 4.7% respectively. However, the average treatment effect on healthcare utilization increases by 12.3%, 24.5%, and 4.5% for persons with hearing, speech, and intellectual disabilities respectively. Coincidentally, people suffering from these impairments are more likely to seek healthcare from the chemical store and medical alternative. Perhaps, it is because the chemical store is cheaper, and medical alternative offers specialized healthcare services.

CONCLUSION AND POLICY RECOMMENDATION

Within the Capability Approach framework, the study first identifies inequality in the endowments and conversion factors across all types of disabilities. Persons living with disability have less monthly income but pay more out of pocket because they are less likely to be insured. Again, disabled persons are more likely to be older, male, uneducated, and live in rural areas. They also spend less time but pay more to travel to the health facility and wait for more hours to receive treatment. The Propensity Score Matching (PSM) model corrects it by matching them. All the types of healthcare providers are also available in the capability set. The Propensity Score Matching and the nearest neighbor estimation method show that just being in a state of disability decreases healthcare utilization by 12.4%. The study further estimates that this result changes among the types of disabilities. The average treatment effect on healthcare utilization decreases for sight, physical, and emotional but increases for persons with hearing, speech, and intellectual disabilities. Based on the findings, it is recommended that persons living with disability should be well endowed and educated to utilize healthcare services as they desire. Disabled persons must be given preferential treatment at the health facilities since they wait for longer hours before they receive treatment. In developing policies to help disabled persons, the types of disabilities must be put into consideration, especially persons with sight, physical, and emotional impairments.

Limitation of the study

The study is limited by the lack of information on the reason for not consulting a physician. There is also a lack of information about seeking healthcare to cure disabilities suffered instead of general healthcare services. This will help distinguish between general healthcare and seeking healthcare to treat disability.

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I declare that except references to other people's work which have duly been acknowledged, this research article is my work. I am responsible for the entire write-up.

REFERENCES

- Abdoli, S., Doosti Irani, M., Hardy, L. R., & Funnell, M. (2018). A discussion paper on stigmatizing features of diabetes. *Nursing open*, 5(2), 113-119.
- Babu, H., Kumar, S. N., Abraham, C., & Lekha, J. (2021). Healthcare-seeking behaviour among working women with disability in Karnataka, India. *Disability, CBR & Inclusive Development*, 32(1), 160-171. <http://doi.org/10.47985/dcidj.441>
- Beaulieu, T., Patten, S., Knaak, S., Weinerman, R., Campbell, H., & Lauria-Horner, B. (2017). Impact of skill-based approaches in reducing stigma in primary care physicians: results from a double-blind, parallel-cluster, randomized controlled trial. *The Canadian Journal of Psychiatry*, 62(5), 327-335.
- Bingham, H., & O'Brien, A. J. (2018). Educational intervention to decrease stigmatizing attitudes of undergraduate nurses towards people with mental illness. *International Journal of Mental Health Nursing*, 27(1), 311-319.
- Blixen, C. E., Kanuch, S., Perzynski, A. T., Thomas, C., Dawson, N. V., & Sajatovic, M. (2016). Barriers to self-management of serious mental illness and diabetes. *American Journal of Health Behavior*, 40(2), 194-204.
- Caliendo, M., & Kopeinig, S. (2008). Some practical guidance for the implementation of propensity score matching. *Journal of Economic Surveys*, 22(1), 31-72.
- Govindasamy, D., Meghij, J., Negussi, E. K., Baggaley, R. C., Ford, N., & Kranzer, K. (2014). Interventions to improve or facilitate linkage to or retention in pre-ART (HIV) care and initiation of ART in low-and middle-income settings—a systematic review. *Journal of the International AIDS Society*, 17(1), 19032.
- Rosenbaum, P., & Rubin, D. (1983). The central role of the propensity score in observational studies for causal effects. *Biometrika*, 70, 41-50.
- Roy, A. D. (1951). Some thoughts on the distribution of earnings. *Oxford Economic Papers*, 3(2), 135-146.
- Rubin, D. (1974). Estimating causal effects to treatment in randomised and nonrandomized studies. *Journal of Educational Psychology*, 66, 688-701.
- Sen, A. (1999). *Development as freedom*. New York: Knopf.
- Storla, D. G., Yimer, S., & Bjune, G. A. (2008). A systematic review of delay in the diagnosis and treatment of tuberculosis. *BMC Public Health*, 8(1), 15.
- Straetemans, M., Bakker, M. I., & Mitchell, E. M. H. (2017). Correlates of observing and willingness to report stigma towards HIV clients by (TB) health workers in Africa. *The International Journal of Tuberculosis and Lung Disease*, 21(11), S6-S18.
- Talukdar, J. R., Mahmud, I., & Rashid, S. F. (2018). Primary health care seeking behaviour of people with physical disabilities in Bangladesh: A cross-sectional study. *Archives of Public Health*, 76, 1-9.
- UNAIDS. (2000). United Nations Agency for International Development. *Protocol for identification of discrimination against people living with HIV*. Geneva.
- Zandam, H. U., Muhamad, H. J., Hayati, K. S., Anisah, B., & Hamza, A. M. (2019). Determinants of health care seeking behaviour and unmet need among people with physical disabilities in Nigeria. *International Journal of Public Health and Clinical Sciences*, 6(1), 61-74. <https://doi.org/10.32827/ijphcs.6.1.61>

Appendix 1: Variable Description

Variable	Definition	Description
Disability	Having any disability (sight, hearing, speech, physical, intellectual, emotional, and others)	Binary outcome taking the value of 1 if disabled, and 0 if otherwise
Health status	If the individual suffered from illness or injury or both in the two weeks preceding the interview	Binary outcome taking the value of 1 if suffered, and 0 if otherwise
Functioning		
Healthcare Utilization	Seek treatment	Binary outcome taking the value of 1 if treated, and 0 if otherwise
Capability set		
Types of Healthcare	Where the patient seek treatment: whether it is public, private, chemical store/pharmacy, or medical Alternative (homeopathy, traditionalist, spiritual)	Categorical
Endowments		
Income	Respondent's monthly income from the main occupation.	Continuous. But can be generated in income quintiles
Price	The cost of treatment (amount paid out of pocket for a folder, consultation, drugs, etc)	Continuous
Health insurance	Holding health insurance cards and have renewed their insurance. This may refer to active membership.	Binary taking the value of 1 if insured, and 0 if otherwise.
Waiting time	Time spent at the health facility to receive treatment	Continuous
Travel time	Time spent to travel to the health facility	Continuous
Travel cost	Amount spent to travel to the health facility	Continuous
Age	the age of the respondent,	Continuous But can be used to generate a categorical variable
Sex	The sex of the individual is grouped into Male and Female.	Categorical
Education	The highest educational attainment of the respondent categorized into no qualification, Primary, Junior High School (JSS, JHS, Middle), Secondary (JHS, technical, vocational), and Tertiary.	Categorical
Location	The area of residence is also grouped into rural and urban.	Categorical