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The Role of Zakāh in providing Health Care for the Poor in Sudan

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Abstract. Despite the relatively long experience of zakāh in social protection and poverty alleviation in Sudan, there is little evidence on its role in facilitating access to health care services to the poor. This paper investigated the role of zakāh office (Diwān Az-Zakāh) in providing health care for the poor in Sudan. The study used administrative and primary data collected from two Sudanese states in 2018. Adopting both qualitative and quantitative methods, the results indicate that zakāh helped a considerable segment of poor families to access health care services, through enrolling them into health insurance coverage and paying treatment costs for poor patients. The quantitative analysis revealed that zakāh beneficiaries have a higher likelihood to access health care compared to non-zakāh beneficiaries. This implies that zakāh reduces out of pocket health expenditures for poor households, hence protecting them from the risk of catastrophic health expenditure. The qualitative analysis based on key informant interviews indicated that zakāh office allocates a huge fund to finance health care for poor households and significantly contributes to universal health coverage in Sudan. The study recommends that enhancing cooperation between the chamber of zakāh and health insurance fund would stimulate the role of zakāh in providing health care for the underprivileged. In addition, the Sudanese zakāh experiment may provide useful lessons to other Muslim-majority countries on providing the poor access to health care services.

KEYWORDS: Zakāh, Health care, Health insurance, social protection, Sudan

JEL CLASSIFICATION: I12, I13, I31, I38
KAUJIE CLASSIFICATION: C55, E11, E15

1. Introduction

High out of pocket (OOP) health expenditure has been regarded as a key challenge that undermines households' access to health care, hence negatively affecting their social welfare and economic development (Xu et al., 2003; Wagstaff and van Doorslaer, 2003 and Van Doorslaer et al, 2006). This is obvious in poor countries contexts, where governments lack sufficient resources to finance healthcare, particularly for poor people who are vulnerable to diseases and live under the poverty line. Healthcare financing means in poor countries vary from tax-based finance to community-based insurance to religious charities, such as zakāh. In many Muslim-majority countries, Zakāh plays an important role in supporting poor households via providing cash, food, and basic services such as education and health care (Latief, 2010; Sharofiddin et al., 2019 and Bilo and Machado, 2020). In the recent decades, the role of zakāh in providing health care for the poor has emerged and become a significant tool for reducing the burden of OOP health expenditure1.

In response to high cost of healthcare expenses that resulted from the adoption of user fee policy in the early 1990s, the government of Sudan introduced its health insurance scheme in 1995. However, due to high poverty rates in the country, the health insurance coverage among poor population remained very low, as a sizable segment of the population was not able to join the health insurance (Ebaidalla and Ali, 2019). Amid this context, in 2011, the chamber of Zakāh has initiated an ambitious poor supporting program, aiming to enroll poor households into a health insurance scheme (Ebaidalla, 2021). The recent statistics showed that the role of zakāh in providing health care has increased remarkably over time (National Health Insurance Fund [NHIF], 2020). In addition, the zakāh fund continuously supported the healthcare system via purchasing medical treatments for poor patients (NHIF, 2020). However, despite the obvious engagement of zakāh in health care provision in the country, the available information on its role in facilitating access to health care to the poor is scant. This study, therefore, aimed to examine the role of zakāh in providing health care for poor households in Sudan.

Based on the above background, this study addressed the following research questions: To what extent does zakāh facilitate the poor households' access to health care services? What is the contribution of zakāh fund to health insurance coverage in Sudan? Does it reduce OOP health expenditures of poor households in Sudan? To answer these questions, the study relied on household survey and key informant interviews along with secondary data gathered from reports of the National Insurance Fund and the Chamber of zakāh.

The contribution of this study is three-fold. First, this study fills an important gap in literature on the role of zakāh in providing health care for poor population. To the best of the authors' knowledge, there is no empirical study on the role of zakāh in facilitating access to health care to the poor in Muslim-majority countries. Therefore, this study would support policies that promote the use of zakāh to finance health care in the Muslim countries, learning lessons from the Sudanese experiment. Second, most of prior studies on the impact of zakāh used either qualitative or quantitative approaches. However, this study adopted both methods for the purpose of robustness check. Third, many developing countries have adopted community-based insurance schemes over the past few decades, (Reich et al., 2016 and Fenny et al., 2021), and Sudan is no exception. Thus, the findings of this study would enhance these initiatives by providing some evidence on the role of zakāh in protecting disadvantaged groups in the country, hence contributing to a universal health coverage (UHC) in the Muslim-majority countries.

The rest of the paper is structured as follows. Section 2 outlined some stylized facts about zakāh and health care provision in Sudan. Section 3 reviewed the relevant literature on the role of zakāh in health care provision. Section 4 introduced the methodology and data used in the analysis. Section 5 reported on

[1] Out of pocket (OOP) expenditure is defined by the World Health Organization (WHO) as "any direct outlay by households, including gratuities and in-kind payments, to health practitioners and suppliers of pharmaceuticals, therapeutic appliances, and other goods and services whose primary intent is to contribute to the restoration or enhancement of the health status of individuals or population groups" (WHO, 2003, 299)

the empirical findings and discussed them. Finally, section 6 provided the main conclusions with suggested some policy recommendations.

2. Zakāh and healthcare provision in Sudan: An overview

This section outlined the evolution of zakāh institution and health insurance fund in Sudan. This section is divided into three subsections. Sub-section 2.1 overviewed the evaluation of zakāh and its contribution to health care provision. Sub-section 2.2 outlined the health insurance fund in Sudan, and ultimately, sub-section 2.3 introduced the chamber of zakāh commitment and achievement in providing health care for the poor population.

2.1 History of Zakāh fund in Sudan

Unlike many Muslim-majority countries, zakāh in Sudan is collected and distributed by the state through the chamber of zakāh, under the supervision of the Ministry of Social development. In 1980, the government established the zakāh fund, adopting voluntary collection and focusing on a few resources such as agricultural crops (Hassanain and Saaid, 2016). In 1984, the first law of zakāh and taxes was approved, making Zakāh' payments compulsory for all those above a certain income threshold (nisab). The 1984 law put zakāh under a single authority with taxes, supervised by the State, through the zakāh chamber. Thereafter, in 1986, the law of zakāh and taxes was amended, and the zakāh chamber became a separate and independent institution. In 2001, the government of Sudan developed a new Zakāh law, emphasizing its role as the main social safety net provider in the country (Kjellgren et al., 2014 and Hassanain and Saaid, 2016). Over the last few years, Zakāh has been considered as the most important mechanism for social protection in Sudan, providing support for poor households in many forms, including unconditional cash transfer, microfinance, health insurance coverage and medical expense for poor families. In addition, the chamber of zakāh gives temporary assistance to poor families during the month of Ramadan (Turkawi, 2015 and Hassanain and Saaid 2016).

The evidence shows that the Sudanese chamber of zakāh enjoys a sizable institutional and financial capacity, spread across all Sudanese states, localities and even villages (Kjellgren et al., 2014). The chamber of zakāh branches at the local level identify the zakāh beneficiaries, using the data gathered from the 2011 poverty census, conducted by the zakāh fund in collaboration with the Central Bureau of Statistics (Turkawi, 2015). The zakāh administration also relies on local committees in the villages to identify the needy and deliver zakāh to the target households.

According to available statistics, zakāh revenues finance about 87% of the government social safety net programs in Sudan (Bilo and Machado, 2020). In 2020, zakāh supported about 2.6 million households over the whole country (Zakāh Fund, 2016). In the recent decade, zakāh has been actively engaged in supporting health care services for the poor people.

2.2 Health insurance in Sudan

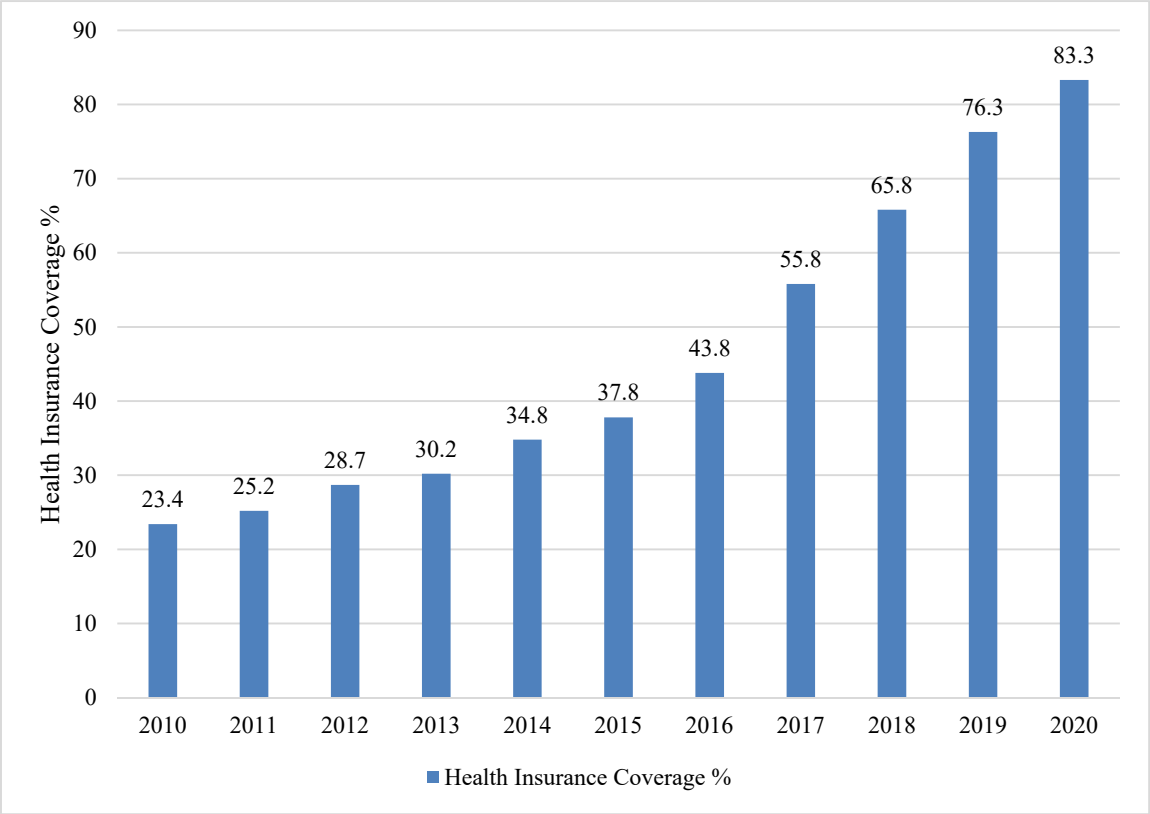
Since the independence of Sudan from Britain in 1956 and up to the early 1990s, the health care service was provided free of charge (Sudanese Federal Ministry of Health, 2014). In the early 1990s, the government introduced the Structural Adjustment Program (SAP), which led to a sharp reduction in the public health expenditure. Subsequently, in 1992 the government introduced the user fee policy to fund its healthcare system (Ebaidalla and Ali, 2019).

To mitigate the negative consequences associated with SAP and user fee policy, the government launched a health insurance scheme in 1995 as an attempt to overcome the problems of inaccessibility to health care services (Salim and Hamed, 2017). In 2003, the health insurance policy was amended and the insurance authority was turned into the National Health Insurance Fund (NHIF, 2017), allowing the access of the entire Sudanese population to health insurance. The NHIF made enrollment mandatory for formal sector employees, and voluntary for the informal sector employees and small businesses (less than 10 employees). The subscriber unit is the family, while beneficiaries include the principal member and dependents (parents, spouse and children).

Despite the considerable efforts made by the health insurance fund to cover the entire population by 2020, the universal coverage remains an unattained target. A survey conducted by the Sudanese Ministry of Health on household health care utilization and expenditure (SHHUES, 2009), indicates that

low income and poverty are among the main factors that curb coverage expansion, particularity among the poor households. To reduce the burden of high out of pocket health spending, the chamber of zakāh launched a poor supporting program in 2011, aiming at paying health insurance premiums on behalf of poor families. On an annual basis, the program supports thousands of poor households, focusing on the poorest families with disabled, elderly and pregnant mothers (NHIF, 2017). The efforts of zakāh have contributed to the expansion of health insurance in the last decade (see Figure 1). As seen in the figure, the health insurance coverage trend in Sudan has witnessed remarkable progress during the period (2010-2020), as this coverage increased from 23.4% in 2010 to 83.3% in 2020. This rapid coverage growth in the recent years reflects the efforts made by the chamber of zakāh (NHIF, 2020).

Figure 1: Evaluation of Health Insurance Coverage in Sudan

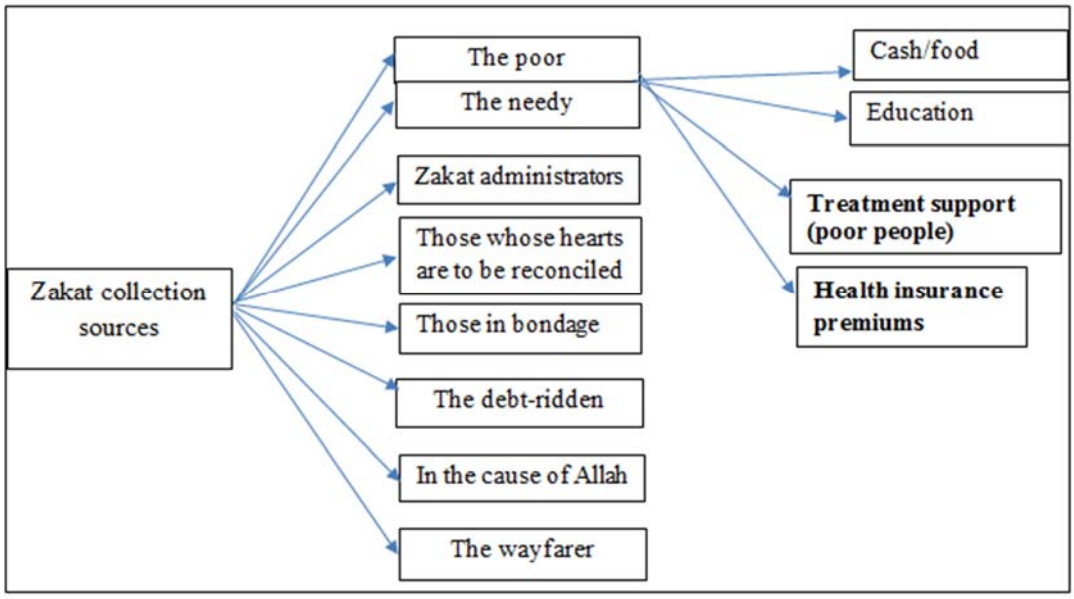


Source: NHIF (2020)

2.3 Zakāh engagement in health care provision

The zakāh in Sudan supports health care provision for the poor through two channels. The first is through enrollment of poor households into a health insurance scheme. As part of its mandate to subsidy the poor and needy, zakāh accommodates a considerable portion of the poorest households into health insurance coverage (NHIF, 2017). According to NHIF, zakāh has contributed significantly to expand the universal coverage via the poor support program initiative during the last decade (see Figure 1). The second channel through which zakāh supports health care for the poor is the direct payment of medical treatments for poor patients. In fact, zakāh provides a considerable fund to poor who need urgent treatment and surgery in public and private hospitals (NHIF, 2017). Figure 2 shows the intervention of zakāh in providing health care for the poor population in Sudan, through the two channels (i.e., insurance premiums and treatment support).

Figure 2. Zakāh contribution to health care provision for the poor people in Sudan



Source: Authors' adaptation based on the zakāh distribution process in Sudan

The figure indicates that zakāh is collected from its sources and then distributed to the eight categories (asnaf), which are mentioned in the Quarn. Allah says in Surat al Tawbah Verse 60, "The alms of zakāh are only for the poor, the needy, zakāh board, those whose hearts are to be reconciled, to free the captives and the debtors, and for the cause of Allah, and the wayfarer; a duty imposed by Allah. Allah is Knower and Wise" (Sura al Tawbah 9:60)2. According to the Sudanese experience, the Poor (Faqir) and needy (Miskin) represent the largest segments, receiving about 70% of total zakāh fund. This is consistent with the main objective of zakāh, as its fundamental target is to alleviate poverty and destitution from society (Al-Qaradawi, 2000). The figure also shows that the fund allocated to the poor and needy categories is directed to cover several expenses including direct cash support, food, education services, and paying health insurance premiums as well as the direct support to patients who live in extreme poverty. Thus, the fund that allocated to health care support is utilized for accommodating poor households into a health insurance, in addition to paying treatments' costs for poor patients.

3. Literature Review

In the Islamic economics framework, zakāh has been considered as a crucial Islamic pillar and an essential tool to achieve social welfare and empower the disadvantaged groups such as poor people. According to Maqāṣid al-Sharīʿah, the Islamic state should provide residents with the basic needs, such as food, clothing and shelter as well as health care and education (al-Faruqi, 1979 and Khatab, 2002). Thus, zakāh is considered as a crucial tool to achieve the goals of Maqāṣid al- Sharīʿah in Muslim communities, particularly the preservation of life. Through the zakāh, rich people can uplift the poor, help those who are troubled and support those who are in hardship. In addition, zakāh is an important means for the Islamic state to achieve social justice among the Muslim population, and eventually provide some kind of social security.

In Islamic jurisprudence (figh), Zakāh is defined as "that portion of a man's wealth is designated for the poor" (Sayyid Sabiq, 1991, p.1)). It is also defined as "an annual tax levied on wealth above a

[2] The English translation of this verse is quoted from the Holy Qur'an by Ali (2001)

specified threshold (Nisab), the proceeds (collection) of which were distributed to the needy" (Jehle (1994, 205). According to Zaim (1989) zakāh is "a compulsory levy imposed on the Muslims so as to take surplus money or wealth from the comparatively well-to-do members of the Muslim society and give it to the destitute and needy" (Zaim, 1989, p.101). Roughly speaking, zakāh is a compulsory obligation for Muslims to purify their wealth, which is rated as 2.5% of all productive wealth accumulated over the course of a year.

Although the Quran specifies the main categories to which zakāh should be distributed precisely (surat al Towbah, verse 60), Muslim scholars argue that there is some flexibility in distributing zakāh to the needy people as it is not limited in terms of cash only. According to some Muslim scholars such as Shaykh Ibn Baaz, zakāh can be used for health purposes and medical treatment of the poor. He says in his argument (fatwa) that "it is permissible to buy specific items (including medicines) for the poor person from zakāh fund when there is a need to do so" (Islam Questions and Answers, 2015). Muslim scholars argue that a sick person who is not able to work and does not have enough income to spend on health care, is one of those who are eligible for zakāh support. In other words, such a person is included in the general meaning of the verse 60 in surat al Towbah. In other words, the poor people suffering from illnesses are more entitled to zakāh than other poor and needy people, because they are not able to earn money (Islam Questions and Answers, 2015). Moreover, since health care expenses require huge amounts of households' budget, an ill who is poor is needier for zakāh than others. Thus, this argument (fatwa) is convincing for using zakāh to support poor' access to health care services.

The role of zakāh in social protection has received a considerable attention from researchers in recent decades. However, most of the existing literature dealt with the role of zakāh in poverty alleviation and microcredit, but only little attention was devoted to health care provision. Moreover, most of the existing research focused on the role of charitable institutions and Islamic voluntary organizations, with little reference to zakāh support. In this section, we briefly reviewed some available empirical research on the link between zakāh and health care provision in Muslim-majority countries.

Despite the little research attention devoted to the impact of zakāh on health care provision, most of the available literature confirms that zakāh significantly contributes to healthcare (e.g. Sharofiddin et al., 2019 and Bilo and Machado, 2020). For instance, Latief (2010) examined the role of community-based initiatives and zakāh in facilitating access to viable health care services for poor households in Indonesia. Using a desk review method and data collected from administrative records, he pointed out that Zakāh plays an important role in providing health care for the poor in rural and urban Indonesia. Specifically, the paper indicates that zakāh intervention in healthcare system significantly contributes to the availability and accessibility of medical treatments to the poor families at low-cost, even free of charge for some cases.

In the same vein, Bilo and Machado (2020) examined the role of zakāh in social protection in three Muslim countries, namely Jordan, Palestine and Sudan. The study revealed that beside the cash and in-kind support programs, zakāh committees run their own hospitals and health care centers in Palestine. For the case of Jordan, they found that health care is one of the most important destinations of zakāh funds, after cash assistance and orphan sponsorship. Zakāh also covers the cost of treatments for a large segment of poor families in Jordan. As an illustration, zakāh protected about 150,000 poor individuals from financial risks associated with medical expenses in 2015. Likewise, the study indicated that zakāh provides health care for Sudanese poor families in collaboration with the national health insurance fund. The study of Bilo and Machado (2020) concluded that zakāh plays an important role in providing health care for the poor in the three countries under study.

Kefeli et al., (2017) examined the impact of zakāh for medical assistance on the life quality of poor households in Malaysia. They found that health status is the significant predictor of the zakāh recipients life quality. At the micro level, the study revealed that the medical assistance by zakāh led to a significant improvement in both health status and quality of life of the poor. Likewise, Sharofiddin et al., (2019) examined the zakāh mechanism effectiveness in social

protection in Malaysia. Using annual data over the period of 2010-2018, they found that zakāh was statistically insignificant to social protection through healthcare. They justified their findings by the weakness of the health care channel in improving social welfare and they recommended that the role of health care be enhanced by offering social health insurance policy for zakāh beneficiaries. Interestingly, their recommendation is in line with what has been taking place in Sudan since 2011.

Despite the scarcity of empirical studies regarding the impact of zakāh on health care provision for poor people, the above discussion makes it clear that zakāh plays a significant role in facilitating the poor access to health care in many Muslim-majority countries. Therefore, this study filled an important gap in literature and provided some policy implications about the link between zakāh and health care provision in the Muslim countries. Moreover, most of the existing experiences of zakāh are focusing on the direct financial support to sick people through purchasing treatments and running zakāh hospital and health centers. However, according to the best of the authors' knowledge the Sudanese experience of paying health insurance premiums on behalf of the poor is unique. Therefore, this study would help in drawing useful lessons from this experience. Furthermore, unlike the previous studies that adopted either a quantitative or qualitative method, this study relied on both quantitative and qualitative methods for the purpose of robustness check.

4. Data and Methodology

4.1 Data

To examine the role of zakāh in facilitating access of poor households to healthcare, the study used three data sources namely, administrative data, household survey and key informant interviews (KIIs). Therefore, the empirical analysis is divided into institutional, qualitative and quantitative analyses.

Administrative data

The administrative data was collected form the chamber of zakāh and the national health insurance fund (NHIF) covering the 2011-2020period. Data about the number of zakāh beneficiaries for all Sudanese states were gathered from NHIF whereas those on the proportion of poor households who enrolled into health insurance through zakāh in each state were gathered from the chamber of zakāh.

Household survey

This study used the dataset collected through a household survey conducted in 2018 to examine the determinants of health insurance affiliation in Sudan3. The survey was funded by the NHIF and covered a sample of 742 respondents selected from two Sudanese states: Khartoum (416) and Kassala (326). These two states were chosen for the purpose of comparison, since Khartoum contains a considerable number of internally displaced people (IDPs), while Kassala is one of the poorest states in Sudan.

The survey is based on the cluster-sampling technique, dividing the population into three groups (i.e. sampling units). The primary sampling unit is represented by the state; the secondary sampling unit is the locality, and finally the administrative unit within the locality represents the final sampling unit. The questionnaire was administrated asking respondents about their demographic and economic characteristics along with health status. The total sample (742) was divided into three groups namely: zakāh health insurance participants (116), self-funded health insurance group (192) and finally the non-health insurance participants (434).

Key Informant Interviews (KIIs)

In addition to the household survey, the study used qualitative data collected via key informant interviews (KIIs). A semi-structured interview was conducted with experts and executive people selected from the health insurance fund and the chamber of zakāh. This provides an in-depth information about the role of zakāh in health care provision. We followed a snowball sampling technique to delibrately select 10 key informants from a list of potential respondents. Five experts were selected from the NHIF and the other five respondents were selected from the chamber of zakāh.

3 The survey is supported by the NHIF and conducted in 2018 to study the factors that influence participation in health insurance.

4.2 Analysis Methods

Based on the above-mentioned data sources, the study used both quantitative and qualitative methods. The analytical and descriptive approach was adopted in the quantitative analysis to assess the extent to which zakāh contributes to providing health care for poor households. Specifically, the analysis adopted descriptive statistics and an econometric approach to understand the impact of zakāh on health care utilization and reducing OOP healthcare expenditure.

Econometric technique

To get more insight into the role of zakāh in facilitating access of the poor to health care we estimated the health demand function, using the OOP health spending as a dependent variable. This helps us to understand the effect of zakāh on health care utilization and access. To this end, we excluded the sub-sample of self-insured, focusing on the remaining two groups (i.e. zakāh insured (116) and non-insured group (434)). Thus, the research question here was whether health insurance provided by zakāh reduces the OOP health expenditure among poor households? It is well understood that OOP health expenditure undermine the ability to access to healthcare, particularly for poor households. Therefore, we expected that Zakāh beneficiaries to be less likely to be exposed to the OOP health spending compared to non-insurance participants. Based on the existing literature on the health demand function (e.g. Grossman, 1972; Parker and Wang, 1997; Su et al, 2006 and Ebaidalla and Ali, 2019), the model specification for households' health expenditure can be expressed as follows:

$$OOP_i = \alpha + \beta X_i + \gamma \text{Zakāh}_i + \varepsilon_i \qquad (1)$$

where OOP is the out of pocket health expenditure, which is the value of money spent by the household on health services during the previous month, measured in Sudanese pound (SDG). Following the empirical literature on OOP health spending (e.g. Grossman, 1972; Su et al, 2006 and Ebaidalla and Ali, 2019), the dependent variable is related to a vector of explanatory variables (X) and zakāh participation variable (Zakāh). The explanatory variables include a set of household' socio-economic, demographic and location characteristics. Specifically, the explanatory variables include the head of the household age, gender, marital status, educational level, size of the household, (urban/rural) residence and distance to health services. Zakāh is our key independent variable, which is expected to have a negative sign, suggesting that participating in health insurance through zakāh reduces OOP health expenditure incurred by the poor households. Finally, ε is a normally distributed error term with zero mean.

To estimate our model, we tried both of the Heckman selection model and ordinary least square (OLS) method. It is well acknowledged that analyzing households' health payment decision using a sample that excludes households who do not report health care payments will lead to biased estimates (Rous and Hotchkiss, 2003). Indeed, poor people generally seek healthcare only when they are sick and so many of them pay for health care only when they seek medical treatment (Rous and Hotchkiss, 2003 and Ebaidalla and Ali, 2019). People who are reported to be sick and seek treatment spend a positive amount on medical attention. Consequently, healthcare spending data is always characterized by a large cluster at zero (0) and a right skewed distribution (Karimo, 2014). In such case, the problem of sample selection bias may arise and, therefore, the conventional OLS method turns out to be inadequate to allow reliable results. To solve the sample selection bias problem, the study referred to the Heckman (1979) two-step selection model to check whether the model under consideration suffers from this anomaly4. The Heckman model results rely on the significance of lambda coefficient (λ), (i.e. the selection term). If lambda coefficient is significant, this implies that the model suffers from the selection bias problem. On the other hand, if lambda is insignificant, it indicates that the model is selection bias-free, and that the OLS estimation can be adopted. To specify the Heckman two-step model, we used the existence of health facilities in a certain community as an instrument in the selection equation.

4 We use the existence of health facilities as an identifying variable in Heckman selection equation. That is, a household residing in a community in which health facilities are available tend to report positive expenditures on health care service, but not the amount of OOP expenditure.

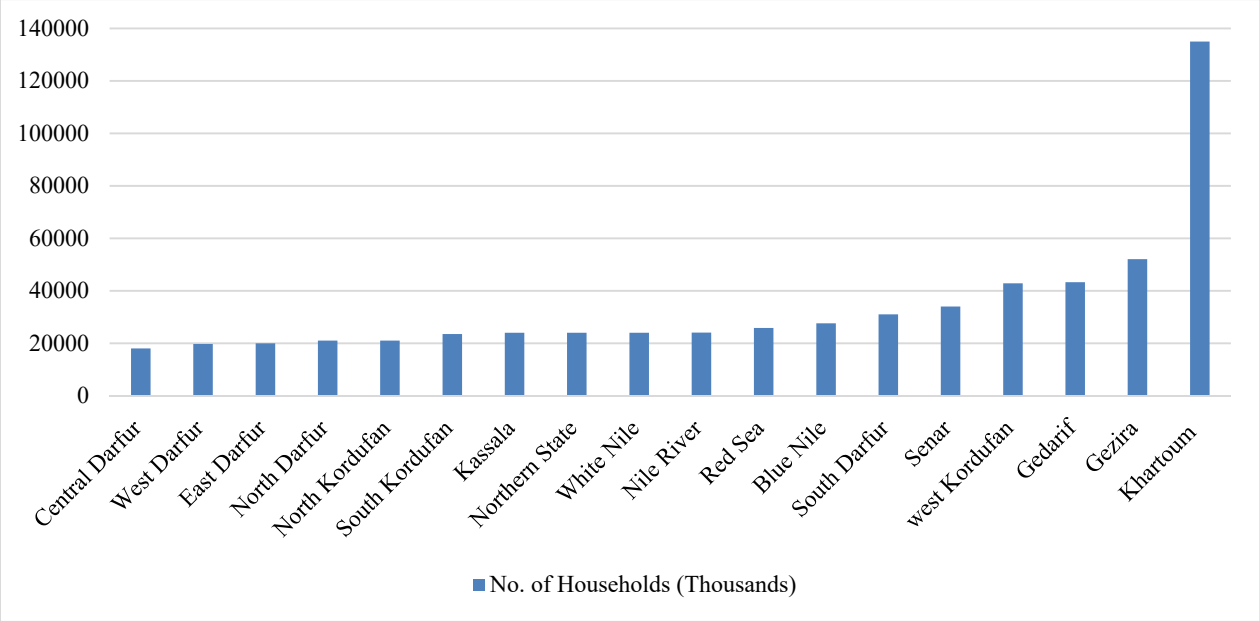
5. Empirical results and analysis

Following the above-outlined methodology, this section reported and discussed the empirical findings. It was divided into three sub-sections: the first sub-section highlighted the contribution of zakāh to health insurance and health care provision based on the administrative data. the second su-section detailed the qualitative analysis based on KIIs whereas sub-section three provided the econometric results and some descriptive statistics on the respondents' key characteristics.

5.1 The role of zakāh in the provision of health care to the poor: Institutional data analysis

As outlined in section two, zakāh contributes significantly to health care provision through two channels: (i) enrolling the poor households into health insurance and (ii) supporting medical treatment of the poorest people. Figure 3 displays the average of households that enrolled annually into the health insurance coverage during the period (2011-2019).

Figure 3. Households that enrolled by zakāh into health insurance by state- average period (2011-2019)

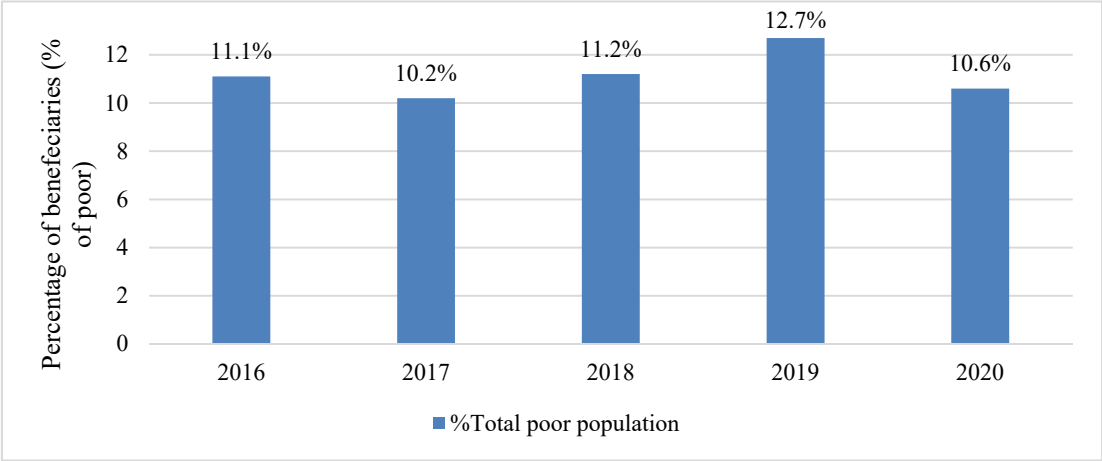


Source: NHIF (2020)

Figure 3 shows that across all Sudanese states, the number of zakāh beneficiaries who were accommodated into the health insurance coverage is more than 20,000, on average during the period of 2011-2019. Zakāh beneficiaries in some states, such as West Kordufan, Gedarif and Gezira exceeded 40,000 households. In Khartoum state, for instance, the number of zakāh beneficiaries is about 135,000 poor households. This can be justified by the fact that Khartoum is the biggest Sudanese city and hosts more than the quarter of Sudan's population.

Regarding the proportion of poor people covered by zakāh, Figure 4 shows the percentage of poor households who benefited from zakāh as a ratio of total number of poor families, over the period of 2016-2020.

Figure 4. Percentage of poor households insured by zakāh as a ratio of the total number of poor families

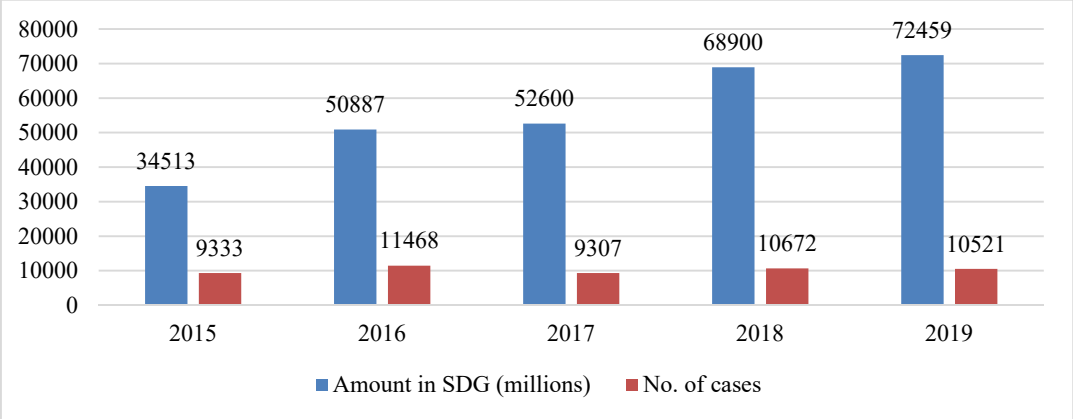


Source: Chamber of Zakāh (2020)

Figure 4 points out that the average percentage of poor households who benefited from zakāh insurance coverage program during the last five years is about 11%. This implies that during this period, zakāh annually enrolls about 11% of the poor population into the health insurance coverage. This also highlights the role of zakāh in facilitating access of poor households to health care services.

As for the second channel through which zakāh supports poor households (i.e., direct payment), the available statistics revealed that zakāh has allocated a considerable fund to treat thousands of poor patients over the last ten years. Figure 5 reports on the number of cases that benefited from zakāh support along with the total amount of fund in Sudanese pounds over the 2015-2019period.

Figure 5: The amount of fund and number of cases that benefited from direct support



Source: Chamber of zakāh (2020)

Figure 5 indicates that the average of poor people who received treatment support is about 10,000 per year during the period of 2015-2019. As previously indicated, the process starts by submitting the treatment bills to the local zakāh unit and then to the chamber of zakāh in a certain state for the payment of the hospital or center where the poor received themedical treatments. This channel contributes significantly to facilitate the access of the poor to health care services and then reduces the impoverishment impact of OOP health payments.

5.2 The qualitative analysis results

As outlined in the methodology, ten interviews were administered to five NHIF' officials (three at the federal level and two at state one) and five executive people from the chamber of zakāh (three in Khartoum and two in Kassala state). The interviews aimed to answer the question on the extent to which zakāh contributes to improve access of poor households to health care? These interviews also aimed at evaluating the intervention adopted by zakāh to enroll the poor into the health insurance system. In this subsection, we summarized the main answers of the interviewees in the two institutions (NHIF and chamber of zakāh).

The chamber of zakāh representatives in the two states acknowledged that zakāh continuously supports the poor through promoting education, facilitating health insurance participation and paying treatment bills. In this regards, interviewee No.2 mentioned that, "Zakāh supports many poor programs including education, health and microcredit. The main objective of zakāh fund is to help the poor and needy, especially those who have no income to pay the costs of health care." Interviewee No.3 claimed that, "Zakāh engages in several programs that aim to improve individual and social conditions. Zakāh supports the health status of the poor in all aspects, through providing health insurance policy and treatment support for the poorest people". All the interviewees indicated that enrolling the poor into the health insurance program is the most important initiative adopted by zakāh in the last decade. Interviewee No 5 said that, "On monthly basis, zakāh is committed to pay insurance premiums for thousands of poor households in Khartoum state, hence, preventing thousands from being exposed to poverty, as health payments send many households to below poverty line. Thus, through the health insurance program, zakāh contributes significantly to poverty alleviation and hence to achieving the main objective of Shari'a (preserving the life)".

The interviewees from the chamber of zakāh pointed out that zakāh as an Islamic obligation that considers life preservation as a top priority. Thus, through providing health insurance for poor households, zakāh contributes to the economic welfare of the nation as healthy people are more able to engage in economic activities, which consequently increases production and economic growth. Interviewee No.1 from zakāh chamber said that "The overall goal of zakāh is to help the deprived people who are suffering from all kinds of discrimination. In this regard, zakāh often supports the healthcare system in Sudan for the benefit of the poor in order to reduce the burden of health expenses." Overall, the zakāh officials revealed that zakāh plays a crucial role in social protection through easing the access of the poor to health care services, hence mitigating the burden of OOP health payments and contributing to poverty reduction.

In the same vein, the information gathered from the interviews with the health insurance officials confirm the support of zakāh to poor households through paying the monthly insurance premiums for thousands of households. Most of the interviewees claimed that the intervention of zakāh in providing health insurance led to the increase of insurance coverage. Therefore, zakāh contributes to the universal health coverage policy in Sudan. For example, interviewee No.2 mentioned that, "Since the beginning of zakāh program, the health insurance coverage has increased remarkably". He added that "Zakāh supports the NHIF plan that aims to accommodate the poor and informal workers under the umbrella of health insurance". Interviewee No.3 from the NHIF pointed out that, "Through zakāh initiative, many poor households and their dependents benefited from health insurance coverage and health service packages provided by the NHIF in the form of medical consultations, drugs and diagnosis". These views confirm the expansion of health insurance coverage during the last decade as shown in Figure 1.

Moreover, there is an agreement among most interviewees that zakāh prevents poor households from catastrophic health charges. The interviewees also indicated that zakāh protects thousands of beneficiaries against becoming a victim of extreme poverty due to high out-of-pocket health payments. For example, Interviewee No. 4 indicated that, "Through insuring poor people, zakāh contributes significantly to reducing the burden of health expenses endured by families, and eventually helps curb poverty in the country"

Both NHIF and zakāh' interviewees mentioned that there is a good collaboration between zakāh and the health insurance fund regarding the provision of health care services to the poor population at both federal and state levels. Overall, most of KIIs confirm that zakāh has a significant role in facilitating the poor access to health care services and contributes significantly to the UHC efforts in Sudan. They also confirm that zakāh reduces the negative consequences of OOP health spending among the poor population in Sudan.

However, despite the positive role of zakāh providing the poor with access to health care, the interviewees raised some concerns about the engagement of zakāh in enrolling the poor into health insurance, and suggested some recommendations to maximize the role of zakāh. The NHIF interviewees claimed that the lack of awareness among zakāh beneficiaries hampers their efforts to enable the poor benefit from health care. In addition, political intervention in selecting zakāh beneficiaries indirectly prevents potential poor persons from accessing health care services. Therefore, the process of identifying beneficiaries needs to be revised. On the other hand, some chamber of zakāh officials claimed that the health care package provided by the health insurance does not cover all medications, causing some of the poor to request extra support from zakāh and other charitable organizations. They also indicated that the high inflation and increase in insurance premiums over the previous years weakened the ability of zakāh to expand health insurance coverage for poor households.

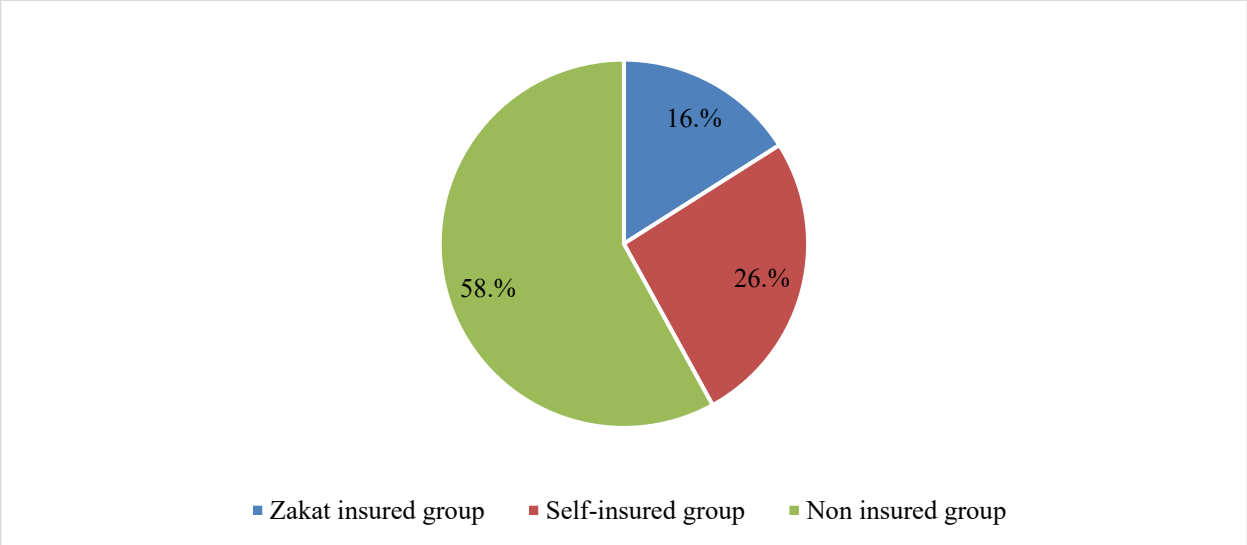
5.3 The role of zakāh in providing health insurance to the poor: A household level analysis

This sub-section introduced the results of quantitative analysis based on the data collected from the household survey. It is divided into two parts: the first part reported on the descriptive statistics of the sample while the second one detailed the econometric results of estimating the impact of zakāh on OOP health expenditure.

5.3.1 Descriptive Statistics

To understand the respondents' demographic and socioeconomic status, we introduced some descriptive statistics about the sample used in the analysis. As previously mentioned, the sample is divided into three groups as shown in Figure 6 below. The first group consists of poor households who enrolled in the health insurance via the chamber of zakāh (116) while the second group involves the self-insured households (192). The third group, however, includes the poor households without health insurance (434). Figure 6 shows the distribution of the sample by group.

Figure 6: Sample distribution by group



Source: Survey data, 2018

The pie chart in figure 6 shows that most of the respondents (58%) do not have health insurance. This indicates that a sizable portion of the poor population in Sudan is out of the health insurance coverage. This also reflects the low rate of health insurance coverage among the poor households in Sudan, as already stated in section 2. The percentage of households that pay for their insurance themselves is about 26%, while the portion of those enrolled through the chamber of zakāh is 16%. Since zakāh fund concentrates on the poorest population, this percentage emphasizes the efforts made by zakāh institutions to provide health coverage for the poor households. This result is also consistent with the administrative data, which shows that the average of poor households who received insurance has been around 11% at the national level, during the last five years.

Table 1 reports the respondents' demographic characteristics, dividing the sample into three groups: zakāh insured, self-insured and non-insured people.

Table 1. Demographic characteristics of the head of households

Respodents	**Measure**	**Zakāh insured**		**Self-insured**		**Non-insured**	
		Freq.	Percent	Freq.	Percent	Freq.	Percent
Age	>= 24 year	1	1	4	2	20	5
	24-35 year	13	11	26	14	108	25
	36-50 year	47	41	80	42	208	48
	51-64 year	35	30	56	29	77	18
	More than 64	20	17	26	14	21	5
Gender	Female	18	16	27	14	53	12
	Male	98	84	165	86	381	88
Size of household	1-3 members	13	11	31	16	61	14
	4-7 members	39	34	68	35	229	53
	More than 7	64	55	93	48	144	33
Marital Status	Married	101	87	168	88	361	83
	Single	2	2	12	6	47	11
	Divorced	4	3	5	3	14	3
	Widowed	9	8	7	4	12	3
Educational status	Illiterate	39	34	50	26	123	28
	Primary	37	32	53	28	116	27
	Intermediate	9	8	13	7	37	9
	Secondary	20	17	45	23	116	27
	University and above	11	9	31	16	42	10

Source: Survey data, 2018

Table 1 indicates that compared to the self-insured and non-insured groups, the majority of zakāh beneficiaries are elders with above 50 years. This implies that zakāh targets the elderly, who are more needy and vulnerable to unemployment and illnesses. The percentage of female respondents in the zakāh sample is also higher than those of the other two subsamples, implying that zakāh supports the poorest females. Moreover, the table shows that the percentage of large households (i.e, having more than seven members) is high for zakāh group (55%) compared to self-funded (48%) and non-insured groups (33%). Since the large households are more vulnerable to poverty and involve a greater number of dependents, targeting this type of households ensures that more people from poor families enjoy health care services. Regarding the marital status, all sub-samples are similar, since married category is similar to the bulk of the respondents. Interestingly, this table also shows that the majority of zakāh beneficiaries have a low educational level if not illiterate, as the percentages of the illiterate and primary education level for zakāh sub-sample are 34% and 32%, respectively, compared to 26% and 28%, for self-insured, and 28 and 26%, respectively for the non-insured group. The high rate of illiterate (34%) among zakāh group indicates that about one third of zakāh beneficiaries are not educated, which might justify their misery. Likewise, the table indicates that the proportion of the respondents who have completed tertiary educa-

tion is very small among zakāh beneficiaries. Regarding the socio-economic characteristics of respondents, Table 2 reports on the main socio-economic indicators for the three groups under study.

Table 2. Socio-economic Characteristics of the Respondents

	Measure	**Zakāh insured**		**Self-insured**		**Non-insurance**	
		Freq.	Percent	Freq.	Percent	Freq.	Percent
Monthly Consumption	Less than SDG 500	15	13	2	1	8	2
	SDG 500 - 1500	52	45	26	14	36	8
	SDG 1500 - 2500	28	24	34	18	78	18
	SDG 2500 - 3500	15	13	58	30	134	31
	SDG 3500 - 5000	2	2	39	20	79	18
	> SDG 5000	4	3	33	17	99	23
Employment status	Employed	96	83	169	88	372	86
	Unemployed	20	17	23	12	62	14
Residence' building materials	Wood and grass/net	46	40	72	38	191	44
	Mud	42	36	64	33	150	35
	Bricks	28	24	56	29	93	21

Source: Survey data, 2018

The table revealed that compared to self-insured and non-insured groups, the majority of zakāh beneficiaries live with income less than 1500 SDG per month. This indicates the extreme deprivation among zakāh beneficiaries, measured by monthly income. In other words, different from the self-insured and non-insured groups, more than half of zakāh respondents live on less than 1500 SDG income. This result confirms once more the fact that zakāh targets the poorest households. Interestingly, the respondents with a monthly income above SDG 5000 represent about 3%, 17% and 23% for zakāh, self-insured and non-insured, respectively. Table 2 also indicates that the unemployment rate among zakāh beneficiaries is high (17%) compared to 12% and 14%, for the self-insured and the non-insured, respectively. Furthermore, the table shows that a considerable segment of the respondents from the zakāh group (i.e. about 46%) resides in houses made of wood and grass, confirming that the majority of the zakāh beneficiaries live in extreme poverty. The big number of houses made of wood and grass may also indicate that poor households lack access to sanitation and hygiene services and are more likely to be exposed to poverty and illnesses. Moreover, living in such harsh conditions is more likely to increase the incidence of infections and acute diseases and, as a result, expose such people to high OOP health payments.

To get better insight into the health situation of the respondents, we introduced some facts about their health characteristics. This would enable us to understand the role of zakāh in facilitating the poor access to healthcare. Table 3 sheds some light about the health situation of the respondents.

Table 3. Respondents Health Status

	Measure	Zakāh insured		Self-insured		Non-insured	
		Freq.	Percent	Freq.	Percent	Freq.	Percent
Respondents Health Situation	Healthy	48	41	113	58	342	79
	Disabled	4	3	1	1	3	1
	Chronic diseases	64	55	78	41	89	21
Types of chronic Diseases of the Respondents	Diabetes	28	44	26	33	21	30
	Hypertension	11	17	10	13	18	26
	Asthma	5	8	2	3	4	6
	Heart disease	4	6	1	1	5	7
	Others	4	6	6	8	6	9
	Co-morbidity	12	19	33	42	15	22
Dependents chronic diseases status	Yes	52	45	64	33	93	21
	No	64	55	128	67	341	79
Number of consultation/ visits to health centers/hospitals	None	0	0	2	1	16	4
	One time	8	7	15	8	43	10
	Two times	3	3	21	11	62	14
	Three times	12	10	20	10	91	21
	> three times	93	80	134	70	222	51
Out of pocket health Expenditures	Nothing	5	4	3	2	17	4
	< 100 SDG	23	20	19	10	10	2
	100-500 SDG	30	26	42	22	95	22
	500-1000 SDG	12	10	40	21	88	20
	1000-1500 SDG	18	16	36	19	88	20
	> 5000 SDG	28	24	52	27	136	31

Source: Survey data, 2018

The table shows that more than half of zakāh-insured respondents (i.e. 55%) suffer from chronic diseases. For the other two groups, however, the proportion of respondents with chronic diseases are about 41% and 21% for self-insured and non-insured groups, respectively. Likewise, the proportion of healthy respondents among zakāh beneficiaries is very small compared to the other two groups. These statistics indicate that the incidence of chronic diseases among zakāh beneficiaries is approximately the double of that of non-insured group. It is worth mentioning that households with a high rate of chronic diseases are more likely to require health care services and be vulnerable to high out-of-pocket health expenditure. Thus, zakāh plays an important role in facilitating access of the poor to health care and reducing their OOP health payments.

Regarding the types of chronic diseases, Table 3 indicates that diabetes and hypertension are among the most common chronic illnesses among the full sample and zakāh respondents. Respondents suffering from diabetes represents 44%, 33% and 30% in zakāh, self-insired and non-insured groups, respectively. The prevalence of these illnesses among poor households may signify the widespread of chronic diseases among the poor population in Sudan. This also confirms the eligibility of zakāh beneficiaries for a health insurance coverage. Moreover, the table reveals that the prevalence of chronic diseases among the dependents of zakāh beneficiaries is high compared to other groups. Since the members of the household benefit from the subscribed head of the family in insurance, zakāh provides a huge segment of the poor population with health care.

The table also reveals that the majority of the respondents in the three groups seek medication more than three times throughout the six months preceding the survey. The high rate of visits to health care facilities among zakāh beneficiaries implies that health insurance enhances health care resort for the poorest families. Interestingly, the table shows that, compared to the non-insured group, zakāh respondents pay less for healthcare, implying that zakāh beneficiaries are less likely to incur high

out of pocket health expenditure. This also means that zakāh plays important role in reducing risk associated with OOP health payments; in other words it promotes access to health care. Moreover, despite the high morbidity rate among zakāh beneficiaries, their OOP expenditure is less than that endured by non-insured group, indicating the importance of insurance in reducing OOP health spending. Overall, the above findings imply that zakāh has a significant impact in facilitating access of poor households to health care, with low OOP health expenditure.

Concerning the respondents' perception on the quality of the health insurance services, table 4 reports some responses regarding service satisfaction and insurance coverage. Since we have only two groups of insurance participants, we rather focused on zakāh and self-insured groups only.

Table 4. The perspective of insurance enrollees regarding satisfaction

Measure		Zakāh insured		Self-insured	
		Freq.	Percent	Freq.	Percent
Beneficiaries' Satisfaction	Excellent	44	38	44	23
	Good	51	44	91	47
	Acceptable	13	11	41	21
	Bad	8	7	16	8
HI's coverage	Covers all prescribed drugs	19	16	24	13
	Covers part of prescribed drugs	96	83	159	83
	Does not Cover the drugs	1	1	9	5
How long under HI	Less than 6 months	5	4	19	10
	6 moths- one year	12	10	17	9
	One year- two years	17	15	42	22
	More than two years	82	71	114	59

Source: Survey data, 2018

Table 4 informs us that about 38% and 23% of zakāh and self-insured groups, respectively, believe that the services provided through health insurance are excellent. About half of the participants in both zakāh and self-funded group declared that these services are good. It is also claimed that the majority of the participants in both groups indicated that health insurance covers only a part of the prescribed treatments. This confirms the claim of zakāh participants who recognizeded that the insurance does not cover all health care services. Finally, according to the same table, the majority of the respondents from the two groups indicated that they have been registered in the health insurance for two years. This confirms the continuous support of zakāh to enroll poor household members into the health insurance coverage.

5.3.2 Econometric Results

As outlined in the methodology, to examine the role of zakāh in health care provision, the study estimated the impact of zakāh on OOP health spending. The first step in the analysis is to apply the Heckman (1979) two-step selection model to test whether it suffers from the problem of sample selection bias. The results in Table 5 indicate that the lambda coefficient (the selection term) is significant, implying that our model is suffering from this bias problem. Therefore, we proceeded with the Heckman selection approach to estimate our model. The Heckman model estimation results are displayed in Table 5.

Table 5: Heckman Selection Model Estimation Results

Dependent variable is the log of health expenditure

Variables	Outcome equation		Selection equation	
	Coefficient	Std. error	Coefficient	Std. error
Zakāh	-0.338***	0.038	-1.329***	0.324
Male	0.105**	0.043	-0.187	0.407
Age	0.001	0.001	0.009	0.012
Married	-0.010	0.042	0.834**	0.326
Years of schooling	0.002	0.003	-0.029	0.028
Household size	-0.002	0.005	-0.015	0.043
No of rooms	0.013	0.010	0.339***	0.119
Chronic	0.032	0.034	-0.305	0.288
Admission	0.195***	0.027	0.105	0.266
Urban	-0.041	0.035	-0.143	0.395
Khartoum	0.059*	0.034	-0.810*	0.465
Distance	0.121**	0.052	-0.066	0.500
Health facilities	-		0.494***	0.102
Constant	1.348**	0.084	0.277	0.820
lambda	-0.262**	0.107		
Observations	550			

Standard errors in parentheses

***, ** and * indicate significance at the 1%, 5% and 10% level, respectively

Focusing on the obtained equation, we can observe that the zakāh coefficient is negative and statistically significant, implying that zakāh significantly reduces out-of-pocket health expenditure among poor households. This also suggests that zakāh reduces the risk of catastrophic health payments, something that was avoided by th poor; hence zakāh positively contributes to their access to health care. In other words, since high OOP health expenditure reduces access to health care, the negative sign of zakāh coefficient implies that zakāh improves access of the poor to health care. This finding also confirms the results reported in the descriptive statistics, as zakāh respondents are less likely to incur high OOP health payments compared to non-zakāh beneficiaries.

6. Conclusion and Recommendations

Over the past two decades, the chamber of zakāh in Sudan has exerted sizable efforts to provide health care for poor people. However, despite the relatively long engagement of zakāh in health care provision, the information available on its role is very scanty. This study, therefore, aimed to examine the role of zakāh in facilitating the poor access to health care in Sudan. To this end, it used administrative data, household surveys and key informant interviews.

Concerning the control variables, the Heckman two-step selection model results indicate that most of the variables are associated with the expected signs and their magnitudes are in agreement with previous studies. Specifically, this result implies that males are more likely to expose to OOP health expenditure than their female counterparts. Admission into hospital has a positive and significant impact on OOP health payment, implying that this admission increases OOP health spending. Finally, and as expected, the distance coefficient is positive and statistically significant, suggesting that households residing in remote areas tend to spend more in order to get access to health care services.

The results revealed that zakāh accommodates a considerable portion of Sudanese poor households into the health insurance coverage throughout the country. Specifically, zakāh enrolls about 11% of poor households into the health insurance annually, targeting families with disabled members and living in extreme poverty. Zakāh also contributes to the treatment of thousands of patients every year. The key informant interviews indicated that during the last two decades zakāh has allocated considerable resources to support poor patients and enroll thousands of poor household members into the health care coverage. Thus, the zakāh intervention obvious-

ly improved the access of the poor to health care services in Sudan. The insurance officials mentioned that zakāh initiative to accommodate the poor into the insurance coverage has significantly contributed to the universal health coverage in Sudan, mainly during the last ten years. The qualitative analysis also pointed out that the lack of awareness among zakāh beneficiaries and the mistakes in selecting target groups are among the main constraints that hamper the role of zakāh in facilitating access of poor households to health care services.

Moreover, the household survey indicated that zakāh accommodated about 16% of poor households into the health insurance in the two states under study. The socioeconomic and demographic characteristics of the respondents confirm that zakāh targets the poorest households. The results also proved that zakāh beneficiaries are less likely to be exposed to out-of-pocket health expenditure, thanks to the zakāh intervention, which noticeably reduced the health expenses. Furthermore, the econometric results revealed that participating in the health insurance programme through zakāh reduced the OOP health expenditure, confirming the fact that zakāh significantly facilitated the poor access to health care in Sudan.

Based on the above findings many recommendations can still be proposed to promote the role of zakāh in providing health care for poor households. First, awareness among zakāh beneficiaries should be enhanced to increase health care utilization among participants. Second, the selection mechanism of target beneficiaries needs to be revised to maximize the role of zakāh by targeting the poorest households. Third, given the increase in poverty in the recent years, further resources need to be mobilized for zakāh fund to expand the insurance umbrella and accommodate more poor people so as to help achieve the universal health coverage. Fourth, collaboration between the chamber of zakāh and health insurance fund should be strengthened via an exchange if information in order to enhance the role of zakāh in this health coverage.

Nevertheless, the results of this study are subject to some limitations. First, the findings resulting from the household survey are based on data collected from two states (Khartoum and Kassala). Although these states represent about 30% of the Sudanese population, the quantitative analysis results cannot be generalized to the rest of the states. Second, the administrative data covers a very short period of time (2015-2020); hence, the unavailability of data that spanned over a longer period prevented us from investigating the effect of zakāh on health sector on the long run. Third, during the past few years, Sudan has witnessed unfavorable economic performances due to the COVID-19 pandemic and political instability after the Sudanese revolution (2018-2019). All these definitely influenced the role of zakāh in supporting the poor population. Therefore, the lack of new data disallowed us to examine the performance of zakāh under the new economic setting of Sudan.

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دور الزكاة في تقديم الرعاية الصحية للفقراء في السودان

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المستخلص. على الرغم من أن تطبيق الزكاة في السودان في جانب الرعاية الاجتماعية وتخفيف حدة الفقر، امتد لسنوات طويلة، إلا أنه لا توجد أدلة علمية تشير لاستفادة الفقراء من الزكاة في مجال الرعاية الصحية. هَدَفت هذه الدراسة إلى تقييم دور ديوان الزكاة في تقديم الرعاية الصحية للأسر الفقيرة في السودان، من خلال تحليل بياناتٍ أوليَّة وثانويَّة جُمِعت من ولايتين في عام 2018. اعتمدت الدراسة على منهج التحليل الكمي والنوعي، وتوصَّلتْ إلى أن الزكاة ساعدتْ مجموعة كبيرة من الأسر الفقيرة في الاستفادة من الرعاية الصحية عبر برنامج التأمين الصحي. كما بيَّن التحليل الكمي أن فرصة المستفيدين من الزكاة أكبر للحصول على خدمات الرعاية الصحية بتكلفة أقلّ، مقارنة بغير المستفيدين، ما يعني أن الزكاة تُسهِم في تقليل النفقات الصحية للأسر الفقيرة، وبالتالي تحميهم من مخاطر الإنفاق الصحي الكبير. كما أشارتْ نتائج المقابلات إلى أن ديوان الزكاة يُخصِّص جزءًا معتبرًا من موارده لتمويل الرعاية الصحية للأسر الفقيرة. بناءً على نتائج البحث تُوصي الدراسة بتعزيز التعاون بين ديوان الزكاة وصندوق التأمين الصحي؛ مما يدفع باتجاه تقديم المزيد من الرعاية الصحية للمحتاجين، كما توصي الدراسة كذلك؛ بالاستفادة من التجربة السودانية في هذا المجال بغرض تسهيل استفادة الفقراء من هذه الخدمة في الدول ذات الأغلبية المسلمة.

الكلمات الدَّالة: الزكاة، الرعاية الصحية، التأمين الصحي، الحماية الاجتماعية، السودان

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