Cost Benefit Analysis Of Traditional Healer A Case Study At Dalomana Town In Bale Zone Southeast Ethiopia.

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Research Article

Keywords: Benefit, Cost, Economic, Ethnomedicine, Healer, Traditional

Posted Date: October 12th, 2022

DOI: https://doi.org/10.21203/rs.3.rs-2143449/v1

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Abstract

Traditional medicine refers to health practices, approaches, knowledge and beliefs incorporating plant, animal and mineral-based medicines, spiritual therapies, manual techniques and exercises, applied singularly or in combination to treat, diagnose and prevent illnesses or maintain well-being. A reconnaissance survey was conducted between March 25 to May 5, 2022. The main objective of the study intends to examine the costs of input, total income and expenditure of traditional healer and identify the economic benefits of those applications of traditional medicine for the country Dalomana Southeastern, Ethiopia. The study sites were selected depending on recommendation from elders, local authorities, and altitudinal range. Thus, the study was carried out in eight PA from two agro-climatic zones. Dallo Manna. The income they generated from their jobs is recorded. The daily income is recorded. The major incomes are direct selling of the drugs as pharmacists and amount of earns they get from diagnosis and treatment of patients. Some practitioners also sell the other products which taken with drugs such as honey and other oil. The total benefit (profits) from the job is analyzed with an average of 650.8 birr daily generated as income and annually 237542 birr is estimated to be as total profit for traditional healer. Analysis of production cost structure revealed that the highest proportion of the production costs across the lead traditional healer for used health related technology and neglect technological and coset went to cost of labor (58%) and different technological activities (22%). As opposed to the traditionally used application of technology was produce more than normal amount of birr without applications., the current study indicated that reduced uses of technology for benefits increased yield per unit area but traditional healer challenged the researchers to improve the feasibility of using reduced seed rate for both row planting and broadcasting.

1. Introduction

Traditional medicine refers to health practices, approaches, knowledge and beliefs incorporating plant, animal and mineral-based medicines, spiritual therapies, manual techniques and exercises, applied singularly or in combination to treat, diagnose and prevent illnesses or maintain well-being (WHO, 2006). Traditional medicine is commonly used to treat or prevent diseases including chronic illness therefore improving the quality of life. It occupies an important place in the health care systems of developing countries. It is estimated that more than 80% of health care needs in these countries are met through traditional health care practices (Tabouti, 2011). A traditional healer is defined as an educated or layperson who claims ability or a healing power to cure ailments. He could have a particular skill to treat specific types of complaints or afflictions and might have gained a reputation in her/his own community or elsewhere. Traditional healer may base his power or practice on religion, the supernatural, experience, apprenticeship or family heritage (Mussema, 2006). In the last decade, there has been a global increase in the use of traditional and complementary/alternative medicines in both developed and developing countries (Teshome, 2015). The reasons in developing countries are cultural acceptability, perceived efficacy, affordability, accessibility and psychological comfort. The other factors are inaccessibility of modern health services in terms of geography, cost or time, shortage of well-trained modern health
professionals (Mussema, 2006). Eighty percent of human and 90% of livestock in Ethiopia depend on traditional medicine for primary health care services where modern public health services are limited or not available (Mussema, 2006). Traditional healers play an essential role in the delivery of primary health care to local people as they treat people in resource poor settings. These people have poor access to modern health services and could not afford the cost for modern health services (Mussema, 2006). However, the contribution of traditional healer to development of countries is not well documented and studies conducted so far are limited on the perceptions and practices of modern and traditional health practitioners about traditional medicine (Reniers G 2009). Therefore, the purpose of this study is to document cost benefit analysis of different application of traditional healer depend the support from government and without support of government. The study might be useful as base line data for future evaluation of the significance of traditional healers’ clinics for public health system and the services rendered in these clinics.

2. Materials And Methods

Description of the Study Area

Dallo Mena district is located in Oromia regional state, Bale zone and covers about 461,665 hectares. It lies between latitudes 5°51’N and 6°45’N, and longitudes 39°35’E and 40°30’E (Figure 1). The altitude ranges from 1314 to 1508 m.a.s.l. The major soil type of the woreda is Nitosol which is the dominant soil in the area (Lulekal, (2008) Climatically the area characterized by bimodal rainfall with the main rainy season occurring early March through June and the short rain late September through November. The mean annual rainfall is 986.2 mm and the mean annual temperature is 22.5°C. According to 2007 Population and Housing Census of Ethiopia, the population number of Dallo Mena was 89,670 (CSA) (2012). The indigenous inhabitants of the area are primarily Oromo peoples. In addition to this few ethnic groups Gurage and Amhara are also settled in the area. Dallo Mena forest has mixed broad-leaved and coniferous montane forest species.

3.2 Sampling design

Reconnaissance surveys were conducted between March 25 to May 5, 2022. The study sites were selected depending on recommendation from elders, local authorities, and altitudinal range. Thus, the study was carried out in eight PA from two agro-climatic zones. Dalo Mana has 18 PA and from selected PA four are Bada dare or semi pastoralist and four are pastoral from arid. Representative common participants and knowledgeable traditional medicine practitioners (key participants) of Dalo Mana were selected using random and purposive sampling approaches, respectively, following Martin (G. J. Martin, 1995). The study undergone through observation and daily income were recorded. The input costs were identified and recorded.

Data Collection.
The standard data collection methods were used and information on demographic characteristics, use and types of traditional medicine, costs of traditional drug (free or buy from market), expenditure (house rent, labor forces costs, transportation costs of drugs and total income of traditional healer and total revenue of traditional healer), sources of healing knowledge, number of visitors per day, reasons for visiting traditional healers' clinics data will be collected. The techniques employed for data collection was semistructured interviews, group discussion, guided field walks, and observations with participants. Semistructured interviews were undertaken based on checklist of questions prepared in English and latter translated to Afaan Oromo, the official language of the study area. The interview was guided to cover the key topics on the checklist. The place and the time for interview were setted based on the interest of the participants. The financial cash flow statements were observed and identified. A sensitivity analysis of the financial outcomes has also been undertaken. The economic resource flow statements were derived directly from these financial cash flow statements by multiplying each line in the financial cash flow statement from the total investment point of view by the appropriate economic conversion factor (CF). A sensitivity analysis was undertaken based on the results of the economic analysis. The supplementary analysis outlined in the model includes a stakeholders’ impact assessment, an analysis of the Family Income Profile, and the Production and Value Chain Distribution system. To complete the data collection, the following steps were be undertaken: 1. Total incomes and expenditures of current, traditional healer practices have been estimated (without intervention scenario) and general revenue were identified. Direct observations of traditional healer were undertaken and the costs for treatment of disease were identified. Healers were received payment for their services that included registration fee and cost of medicine. The registration fee ranged from 2.00 birr to 20.00 birr (1 ETB = 0.04 EURO, 0.06 USD) though none of the traditional healers' have formal registration system for their patients. The cost of medicine was paid immediately after getting the treatment and showed variation from healer to healer as well on type of disease and the costs were identified.

**Data Analysis**

The collected financial data was entered into Excel spreadsheet and analyzed using descriptive statistical methods such as frequency and percentage, and presented in tables, and graphs.

Descriptive analysis:

A cost-benefit analysis for the different application of traditional healer strategies was conducted using net present value (NPV) and benefit-cost ratio (BCR). A high NPV indicates the most efficient and economical adaptation strategy. Similarly, adaptation strategies with the highest BCR were the most economical compared to those with low BCR. This can be done by;(i)Identifying the adaptation strategies employed in the communities.(ii)For each adaptation strategy, the total costs incurred when using that strategy and benefits were identified and used to compute the net benefit for that particular adaptation strategy.
3. Results

The transportation, Housing condition (working environmental), size, the level of education, the age and
the practicing the traditional healer experiences of the lead traditional healer were highly variable (Table
1). It is hypothesized that the above-mentioned parameters can be positively or negatively related to
traditional healer productivity and efficiency. For instance, higher-level education, for example, secondary
school of the lead traditional healer is assumed to enhance productivity through the application of
pertinent information that improves productivity and efficiency. The result of the analysis showed that the
proportion of respondents in each age class was nearly equal (Table 1). With regard to education, most of
the respondents had completed primary education. This shows that over 90% of the respondents are able
to read and write; hence, they can easily adopt traditional healer activities improvement (uses of cell
phone, ways of diagnosis of the disease, different information related to new emerging disease and
other technology related to health information. The proportion of respondents who had between 5-10
years of farming experiences was greater than those who had either 1-5 or more than 10 years of
experience. The study further showed that the majority (48%) of the respondents owned working area
separately from living house although those no possessing working house are also about 40%.

Demographic characteristics

Majority of the traditional healers found in the study area were illiterate males, 18 (81.8%) and the
remained 4 (18.2%) were females, aged 20-70 years and with an average age of 56.55.

Source of healing wisdom and indigenous knowledge transfer

The highest source of healing wisdom was a family line (15, 68.18%) followed by “Qur’an”, 3, 13.64%,
Neighborhood and observation (2, 9.09 %), traditional healers with payment (1, 4.545 %), “Bible” (1,
4.545%). This provide evidence that indigenous knowledge of the study area was transferred through
family line, most of the healers need to share to their own family in general and to their young man in
particular and they accepted that their reluctance in sharing their knowledge to others was due to income
generation of that healing wisdom. from one religious leader and indicted that presence of close
interaction of Christian, Islamic and indigenous religions with traditional medical systems. Even though
there is a wealth of indigenous knowledge in the study area, most of the healers were reluctant in sharing
their own knowledge and it is only transferred orally in a family line. Ethnomedicinal knowledge is
concentrated in the elderly and relative members of the community and difficult in its transfer from the
elders to the young generation. Most of the respondents (79%) preferred to transfer their indigenous
knowledge to their family verbally and the remaining participants (21%) through showing the medicinal
plants in the fields. Indigenous knowledge transfer to the young generation is considered poor which may
cause erosion of the practice.
Table 1. Socio-economic characteristics of traditional healer practitioner (N = 40)

<table>
<thead>
<tr>
<th>Socio-economic characteristics</th>
<th>Numbers of Respondent</th>
</tr>
</thead>
<tbody>
<tr>
<td>(No of respondents)</td>
<td>N</td>
</tr>
<tr>
<td><strong>Age group</strong></td>
<td></td>
</tr>
<tr>
<td>21-30</td>
<td>5</td>
</tr>
<tr>
<td>31-40</td>
<td>8</td>
</tr>
<tr>
<td>41-50</td>
<td>12</td>
</tr>
<tr>
<td>Above 50</td>
<td>15</td>
</tr>
<tr>
<td><strong>Educational level</strong></td>
<td></td>
</tr>
<tr>
<td>Non-formal education</td>
<td>22</td>
</tr>
<tr>
<td>Primary school</td>
<td>15</td>
</tr>
<tr>
<td>Secondary school</td>
<td>3</td>
</tr>
<tr>
<td><strong>Traditional healing practice experience</strong></td>
<td></td>
</tr>
<tr>
<td>1-5 years</td>
<td>8</td>
</tr>
<tr>
<td>5-10 years</td>
<td>19</td>
</tr>
<tr>
<td>&gt; 10 years</td>
<td>13</td>
</tr>
</tbody>
</table>

**Input types and variable costs**

The traditional healers were advised to keep record of accomplishment of their inputs they utilized on their practice. The major inputs considered for analysis were amount of input material costs, drugs preparation, and a variety of costs related to labour. Labour costs include those for cleaning the house, drug preparation, and supporting different activities.

**Daily income of traditional healer**

Traditional healer practitioners were advised to keep record of accomplishment of ethnobotanical inputs they utilized on their plots. The major inputs considered for analysis were amount of products of
medicinal plants parts, a variety of costs related to labor, containers of the drugs and rent houses. The income they generated from their jobs is recorded. The daily income is recorded. The major incomes are direct selling of the drugs as pharmacists and amount of earns they get from diagnosis and treatment of patients. Some practitioners also sell the other products which taken with drugs such as honey and other oil. The total benefit (profits) from the job is analyzed with an average of 650.8 birr daily generated as income and annually 237542 birr is estimated to be as total profit for traditional healer.

Table 2. Costs and benefits of the traditional healer in study area.

<table>
<thead>
<tr>
<th>Input Costs and benefits (DAILY)</th>
<th>Amount in money</th>
</tr>
</thead>
<tbody>
<tr>
<td>Costs</td>
<td></td>
</tr>
<tr>
<td>Medicinal parts</td>
<td>56.4</td>
</tr>
<tr>
<td>Labor forces</td>
<td>27.8</td>
</tr>
<tr>
<td>Rent houses</td>
<td>100</td>
</tr>
<tr>
<td>Transportation costs</td>
<td>55</td>
</tr>
<tr>
<td>Costs of container</td>
<td>20</td>
</tr>
<tr>
<td><strong>Total costs</strong></td>
<td><strong>259.2</strong></td>
</tr>
<tr>
<td>Income (outputs)</td>
<td></td>
</tr>
<tr>
<td>Selling of drugs</td>
<td>210</td>
</tr>
<tr>
<td>Income from diagnosing and treatment</td>
<td>500</td>
</tr>
<tr>
<td>Income from other products</td>
<td>200</td>
</tr>
<tr>
<td><strong>Total income</strong></td>
<td><strong>910</strong></td>
</tr>
<tr>
<td><strong>Total benefits</strong></td>
<td><strong>650.8</strong></td>
</tr>
</tbody>
</table>

The researchers made frequent observations and monitoring throughout the study period. These frequent observations and monitoring by the researchers have convinced the traditional healer to strictly follow and manage their income and costs. Based on the recommended the traditional healer practices of the respective to accessible to main road, having working area separately from living house, using mobile phone and accessible to network and electric facility generally town and remote area

As depicted on table 3, the average of income of traditional healer living in town and remote were 852 birr and 615 birr, respectively. This income gap between the traditional healers led us to group the
respondents into two clusters (table 3). On average, the residents of towns gave higher daily income than remote area mainly due to the easily accessible the communities and other different factors which increases the daily income

Table 3. Grouping of traditional healer practitioner based on the costs and benefit obtained from the two clusters of the respondents

<table>
<thead>
<tr>
<th>Respondent group</th>
<th>Group interval (daily income of birr)</th>
<th>town (n = 12)</th>
<th>remote (n = 28)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>Birr</td>
<td>N %</td>
<td>N %</td>
</tr>
<tr>
<td>I</td>
<td>500 – 750</td>
<td>2 13.0</td>
<td>22</td>
</tr>
<tr>
<td>II</td>
<td>750 – 850</td>
<td>3 39.1</td>
<td>6</td>
</tr>
<tr>
<td>III</td>
<td>850 and above</td>
<td>7 47.8</td>
<td>0</td>
</tr>
</tbody>
</table>

**Multiple regression models**

In this multiple linear regression model, amount of daily income was expressed as a function of easily accessible to service of the communities, labour and drug inputs. The estimated coefficients of all the input variables had positive signs as expected (table 4). Easily accessible to road would increase daily income by 6.2%. Similarly, use of mobile phone could increase daily income by 2.2%. From the estimated coefficient, it is evident that easily accessible to road and having mobile phone were by far the most important independent variables explaining positive significant effect on daily income.

Furthermore, the costs of drugs affects the daily income of the respondents traditional healer. Hence, based on our study, the estimated daily income yield (Y) of the improved facility would be $Y = 13.5 + 0.22 \text{having mobile phone} + 0.62 \text{easily accessible to road} - 0.36 \text{costs of drugs} + 0.09 \text{labor} + 0.14 \text{having house}$. This implies that, to maintain high level of amount of daily income, traditional healer should learn to adjust input use in changing conditions, where adding more costs of drugs had negative impact on daily income. $R^2$ (R-square) estimated at 0.52 had shown that there are still other relevant factors which account for this influence. In multiple regression model, the small size of $n$ and how high an $R^2$ are indicators to detect collinearity. A sign of multicollinearity is, detected when $R^2$ is very high and none of the regression coefficients is statistically significant on the basis of conventional t-test. Our results revealed none of the above.
Table 4. Multiple regression analysis of major variables influencing daily income (n = 40)

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Coefficient</th>
<th>SE</th>
<th>T</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>13.5</td>
<td>4.31</td>
<td>3.13</td>
<td>0.002</td>
</tr>
<tr>
<td>Accessible to road (km)</td>
<td>0.22</td>
<td>0.12</td>
<td>1.92</td>
<td>0.050*</td>
</tr>
<tr>
<td>Having phone (credit card)</td>
<td>0.62</td>
<td>0.16</td>
<td>3.87</td>
<td>0.000**</td>
</tr>
<tr>
<td>Costs of drugs (birr)</td>
<td>-0.36</td>
<td>0.14</td>
<td>-2.57</td>
<td>0.002**</td>
</tr>
<tr>
<td>Labor (man-hours)</td>
<td>0.09</td>
<td>0.12</td>
<td>0.75</td>
<td>0.767</td>
</tr>
<tr>
<td>Having house (meter size)</td>
<td>0.14</td>
<td>0.13</td>
<td>1.108</td>
<td>0.274</td>
</tr>
</tbody>
</table>

Adjust R² = 0.52** and * significant at < 0.01 and 0.05, respectively

5. Discussions

Ethnomedicinal knowledge is concentrated in the elderly and relative members of the community and difficult in its transfer from the elders to the young generation. Most of the respondents (79%) preferred to transfer their indigenous knowledge to their family verbally and the remaining participants (21%) through showing the medicinal plants in the fields. Indigenous knowledge transfer to the young generation is considered poor which may cause erosion of the practice. The study revealed that medicinal plant knowledge transfer to the young generation is affected by modernization. This might be related to the diminishing of interest of the young generation on indigenous knowledge. Similar result was reported by (Yineger and Yewhalaw, 2007 and Nurya, 2020) where young people showed disinterest on traditional medicinal plants.

There are also other views that elderly people keep the indigenous knowledge as a big secret, for instance some of the traditional medicinal plants are poisons, while and have a big risk of using them. The trend of keeping indigenous knowledge on medicinal plants as a secret is also common in other ethnic groups in the country (Haile Yineger et al., 2007; MirutseGiday et al., 2009; TilahunTeklehaymanot, 2009; ErmiasLulekal, 2014). Accessibility of traditional medicinal plants in the market were also reported in various findings elsewhere in Ethiopia (MirutseGiday et al., 2007; ErmiasLulekal, 2014).

In this study area the total benefits (profits) from the traditional healer practices is estimated to be 237542 birr annually generated as income. As globally, Endashaw (2007) reports that the traditional medicine industry in Ethiopia has remained an informal industry with no official trade industries while the global value of herbal plants is estimated to be US$ 500 billion with USA, Germany, China, India, Chile and Egypt playing the major role. In addition, Kayne (2009) estimates that there are about 27 million consumers of traditional medicines in South Africa and that the African healing trade contributes an
estimated ZAR 2.9 billion to the national economy with 771 plant species used for traditional medicine with a cost of about R4.800 per kilogram.

CONCLUSIONS AND RECOMMENDATIONS

Analysis of production cost structure revealed that the highest proportion of the production costs across the lead traditional healer for used health related technology and neglect technological and Boset went to cost of labor (58%) and different technological activities (22%). As opposed to the traditionally used application of technology was produce more than normal amount of birr without applications, the current study indicated that reduced uses of technology for benefits increased yield per unit area but traditional healer challenged the researchers to improve the feasibility of using reduced seed rate for both row planting and broadcasting. Finally, given the input and output prices that prevail in the selected districts, the lead healer obtained substantial benefits, indicating that traditional healer is not only a financially viable venture, but it has been significantly contributing towards generating household cash income and ensuring food security in the changing climate.

Similarly, the following five recommendations have been forwarded

- Studying production costs make technology sustainable and profitable, and bridge the glaring gap between production costs and product selling prices;
- The optimum amount of input required for production should be revised based on the inherent application of health related technology of the traditional healer, housing use pattern and information systems;
- Knowledge sharing among traditional healer across the study districts could speed up technology transfer;
- From focused observations, interviews and group discussions held with traditional healer, interventions are needed to minimize cost of labor for harvesting and weeding of medicinal production.

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Declarations

Ethical Consideration Ethical clearance was obtained from the Institutional Review Board of Medawalabu University with the Ref. no EC112/2020. Furthermore, verbal informed consent was obtained from traditional healer and household individuals participated in the study, after explaining the purpose of the study in their local language (Afan Oromo). Data Availability The raw data used to support the findings of this study is available at correspondent author and accessed if requested. Conflicts of Interest The authors declare that they have no conflicts of interest. There is no conflict of interest. Funding No funding. Authors’ Contributions Sufian A. generated the idea, proposal, and paper write-up completed the paper, and analyzed data. Hasan A, Mohammed E., Awal H., Taha K., Abdo H, and Abay N. have taken part in paper write-up, data analysis, and edition of the manuscript. All authors read and approved final version of the manuscript and conceived the study. Acknowledgments The authors are thankful to Traditional healers who participate in study. Consent for publication Not applicable

Figures
Figure 1

Map of Dallo Mena Woredas of Bale zone, Southeast Ethiopia.