

# Cost-Effectiveness Analysis of Telemedicine for Out-Patient Care in Abuja: A Comparative Study with In-Person Healthcare Delivery

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## ABSTRACT

**Introduction:** Telemedicine has emerged as a promising innovation in healthcare delivery. Despite the increasing interest and widespread adoption in Nigeria, there remains a limited evidence on the cost-effectiveness of telemedicine compared to the conventional in-person healthcare delivery. This study therefore evaluates the costs and effectiveness outcome of telemedicine relative to in-person care among out-patient population in Abuja, Nigeria.

**Methodology:** A cross-sectional comparative design was employed involving 109 respondents from facilities in Abuja that offers telemedicine and in-person healthcare delivery particularly private facilities. Data was collected using structured questionnaires. Costs were analysed from the patient's perspective incorporating both direct and indirect medical costs. Effectiveness was measured using patient-reported health improvement scores. The average costs and effectiveness were computed for each mode of care and the cost-effectiveness ratio (CER) was calculated to determine the economic advantage of telemedicine. Sociodemographic variables and patient satisfaction indices were analysed to provide additional contextual understanding.

**Results:** The sociodemographic analysis revealed that the majority of patient respondents were employed and tertiary educated indicating a population with high digital literacy and economic activity. The findings demonstrated that usage of telemedicine services incurred an average total cost of ₦5,766.55 with an average effectiveness of 1.60 while in-person care incurred an average total cost of ₦11,484.23 with average effectiveness of 1.82. The results yielded cost-effectiveness ratios of ₦3,604.09 and ₦6,308.92 respectively. Thus, in-person care was approximately twice as expensive as telemedicine largely due to transportation, opportunity costs, and consultation fees. Telemedicine yielded a more favourable cost-effectiveness ratio confirming its economic advantage in out-patient service delivery. It also demonstrated a higher satisfaction in areas such as waiting time, affordability and ease of access.

**Conclusion:** The study concludes that telemedicine is a more cost effective mode of healthcare delivery for outpatient in Abuja. Its economic advantage coupled with high satisfaction ratings positions it as a viable complement to conventional in-person healthcare delivery particularly for follow-ups and consultations. However, scaling up telemedicine will require infrastructural investment, digital literacy and well grounded policy frameworks. To ensure the sustainability of telemedicine in Nigeria, the study recommends the establishment of national policy and regulatory frameworks, investments in digital infrastructure, capacity building and digital literacy among providers and patients.

**Keywords:** Telemedicine, Cost-Effectiveness, Out-Patient Care, In-Person Care, Healthcare Delivery

