Title: Technological and social approaches to maternal health services improvement: a quasi-experimental assessment of the effect of decision-support and performance-based incentives on client satisfaction with maternal health services in northern Ghana.

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Computerized decision support system (CDSS) and performance-based incentives (PBIs) have potential to contribute to clients’ satisfaction with maternal health services. However, rigorous evidence is lacking on the effectiveness of these strategies in developing countries such as Ghana. This study aimed to determine the effect of CDSS and PBI on clients’ satisfaction with maternal health services in northern Ghana.

The study employed a quasi-experimental controlled baseline and end line design with an explanatory mixed-methods model to assess the effects of the two interventions on client satisfaction with maternal health services. The quantitative research component consisted of a controlled prepost-test design, which allowed quantitative measurement of client satisfaction with care. To obtain explanatory descriptions of the effects of the interventions on motivation and performance of providers, 48 in-depth interviews were conducted in twelve health facilities in Kassena-Nankana and Builsa districts at intervention end line. A difference-in-difference logistic regression analysis controlling for potential covariates compared variables across intervention and comparison facilities at baseline and end line. Nvivo version 10 was used to manage qualitative data.

CDSS and PBIs were associated with improvements in client satisfaction with maternal health services. Antenatal clients in the intervention arm at endline reported a statistically significant difference on their perception of providers’ technical performance, client-provider interaction and healthcare providers’ availability to provide care. Furthermore, delivery clients’ satisfaction scores were significantly higher among intervention healthcare facilities for technical performance, client-provider interaction, healthcare provider availability and overall satisfaction with delivery services. Qualitative findings supported quantitative findings.

#### CDSS and PBIs interventions positivelyaffectedantenatal and delivery client satisfaction with services. This short-term effect was shown within two years after implementing the interventions. Future research is required to evaluate long-term effects of these interventions on client satisfaction.

Table 1.0 Multivariable Logistic Regression Analysis on Antenatal Clients' Satisfaction with Services

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Outcome Variable** | **Baseline** | | | | | | **End line** | | | | | | **DiD** | |
| **Intervention** | | **Comparison** | | **Difference** | **P-value** | **Intervention** | | **Comparison** | | **Difference** | **P-value** | **Diff-Diff** | **P-value** |
| **Obs** | **Mean** | **Obs** | **Mean** | **Obs** | **Mean** | **Obs** | **Mean** |
| Technical Performance | 276 | 0.6 | 309 | 0.7 | 0.0 | 0.9 | 368 | 0.7 | 345 | 0.6 | 0.1 | 0.0 | 0.2 | 0.0 |
| Client-provider interaction | 276 | 0.6 | 309 | 0.6 | 0.0 | 0.2 | 368 | 0.9 | 345 | 0.7 | 0.2 | 0.0 | 0.2 | 0.0 |
| Healthcare provider availability | 276 | 0.5 | 309 | 0.6 | 0.0 | 0.3 | 368 | 0.6 | 345 | 0.5 | 0.1 | 0.0 | 0.2 | 0.0 |
| General satisfaction | 276 | 1.0 | 309 | 0.9 | 0.0 | 0.1 | 368 | 1.0 | 345 | 1.0 | 0.0 | 0.6 | 0.0 | 0.05 |

Table 2.0 Multivariable Logistic Regression Analysis of Delivery Clients' Satisfaction with Services

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Outcome Variable** | **Baseline** | | | | | | **Endline** | | | | | | **DiD** | |
| **Intervention** | | **Comparison** | | **Difference** | **P-value** | **Intervention** | | **Comparison** | | **Difference** | **P-value** | **Diff-Diff** | **P-value** |
| **Obs** | **Mean** | **Obs** | **Mean** | **Obs** | **Mean** | **Obs** | **Mean** |
| Technical Performance | 313 | 1.0 | 333 | 0.9 | 0.1 | 0.0 | 211 | 1.0 | 94 | 0.9 | 0.1 | 0.1 | 0.0 | 0.5 |
| Client-provider interaction | 313 | 0.8 | 333 | 0.8 | 0.0 | 0.5 | 211 | 1.0 | 94 | 0.9 | 0.1 | 0.0 | 0.2 | 0.0 |
| Healthcare provider availability | 313 | 0.7 | 333 | 0.7 | 0.1 | 0.1 | 211 | 0.4 | 94 | 0.4 | 0.1 | 0.4 | 0.1 | 0.9 |
| General satisfaction | 313 | 1.0 | 333 | 0.9 | 0.1 | 0.0 | 211 | 1.0 | 94 | 1.0 | 0.0 | 1.0 | 0.1 | 0.0 |