Increased Social Power Among Community-Based Skilled Birth Attendants: An Evaluation of a Frontline Health Workers Intervention

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Abstract

Background: This paper assesses the effects of the Skilled Health Entrepreneur (SHE) program in Sylhet District, Bangladesh. The SHE program prepared community-based skilled birth attendants (SBAs) known as SHEs. The SHEs offered safe home-based delivery and the program incorporated activities deliberately designed to increase the power of the SHE in their social context. That project design assumed that increased independence and agency could make the SHEs more effective in serving their clients and support positive norms change about women's role in the community. This analysis will examine whether the SHE program increased the social power of the community women who became SBAs.

Methods: 252 SHEs completed quantitative questionnaires covering their socio-demographic characteristics, professional activities, income, and decision-making in the home. The program administered the questionnaires shortly after induction into the program and at the conclusion of the program. The data represent short panel data with observations of 252 individuals at two points in time. This analysis uses a fixed-effects panel analysis of change from beginning to end of the program.

Results: SHEs earned 7659.78 takas (or roughly 90 USD) more per month at the endline than at the baseline, in the context of an average annual household income in Bangladesh of approximately 600 USD. (CECI, 2016) The SHEs' professional engagement increased from an average of 10.41 presentations given per reporting period to one of 16.10. The proportion of SHEs making decisions independently increased on three out of three decision-making items: seeking healthcare for herself, seeking healthcare for her children and use of contraception. The endline combined social power score was 8.65, compared to a baseline of 6.18. All results were statistically significant.

Conclusions: The design of this intervention meaningfully increased agency, income, and professional engagement among the SHEs. These changes occurred in the context of a project that also successfully improved maternal health outcomes. Such models can improve health outcomes while shifting gendered power dynamics by investing this cadre of resident women with increased agency, recognition, and wealth.

Background

This paper will assess the effects of the Skilled Health Entrepreneur (SHE) program in Sylhet District, Bangladesh, on the SHE's power in their social context. This program developed a cadre of community-based skilled birth attendants (SBAs). The SHEs offered home delivery services that met minimum clinical standards for safe delivery and received formal recognition from the health system, allowing them to refer complications to health facilities. (Hossain et al., 2020) This approach created a reliable source of Skilled Birth Attendants (SBAs) care in geographically remote, underserved areas.

Notably, the newly introduced frontline health workers in this intervention closer to social peers of clients than nurses and doctors in mainstream health facilities. The Skilled Health Entrepreneurs (SHEs) were women already residing in the communities served. The SHE model incorporated activities deliberately

designed to increase the power of the SHE in their social context. The inclusion of those elements in the project design grew from the assumption that increased independence and importance could help the SHEs be more effective in serving their clients and potentially support positive norms change about women's role in the community. This analysis will examine whether the SHE program increased the social power of the community women who became SBAs.

Project Context

The SHE model deliberately incorporated elements targeted explicitly at "empowering" the SHEs, in addition to skills-building and performance-focused supervision. This work seeks to clarify the understanding of the "empowerment" of the SHEs. This paper will develop the concept of social power as a framework to understand relevant power dynamics, elaborate a measurement strategy to quantify it, and assess the change in social power from the beginning to the end of the project.

Because empowerment as a concept is fraught with contradictions and ambiguities, this analysis will develop the concept of social power as an alternative. Drawing on the concept's use in psychology and other fields related to global health, social power refers to the individuals' power over decisions in the context of their social relationships. (Gülgöz & Gelman, 2017; Keltner, Van Kleef, Chen, & Kraus, 2008; Rucker & Galinsky, 2017; Scholl, Sassenberg, Ellemers, Scheepers, & de Wit, 2018) Social power has been proposed as a valuable way to understand how group status can influence individual member behavior within a group. (Scheepers, Ellemers, & Sassenberg, 2013) While no consensus exists on the precise measurement, this work can specify the concept in the global health context.

Social Power and the Elements of Social Power

The concept of social power serves as an alternative to "empowerment." Constructions of empowerment abound and lack a single, commonly accepted approach to conceptualization or measurement. (Kok et al., 2015; Richardson, 2018) Furthermore, the term "empowerment" connotes a passive process performed on the powerless by the powerful. (Kane et al., 2016) We choose to offer social power as an alternative. This analysis defines social power as the state of having the ability to exercise one's own will autonomously in one's social context.

These elements contribute to an increase in SHEs' power, a change this paper will conceptualize as increasing social power instead of using the concept of empowerment. Empowerment is an often-used, ill-defined concept, measured in many different forms from psychological to organizational and levels from individual to the community. (Cyril, Smith, & Renzaho, 2015) Empowerment can present internal contradictions, as it is often conceptualized as top-down, a characteristic conferred on those with less power by those with more power. (Closser et al., 2020) Further, empowerment can be co-opted to obscure the reality of power relations among community-based health workers, their clients, and municipal and health authorities. (Closser et al., 2019)

This work will construe social power more narrowly than most characterizations of empowerment. Social power will be constructed to refer to individuals, not communities or social systems. Agency, a central concept in empowerment and one of the most straightforward to measure directly, is central to social power. A second key element is their compensation, which increases the SHEs' independence and provides concrete evidence of the value of her service. A third element is her professional engagement, marking a transition from a less socially powerful homemaker to a more powerful health professional. (See Fig. 1.) Social power does not attempt to encompass and measure the broader enabling structures or a comprehensive assessment of the SHEs' interpersonal or psychological conditions.

Increasing the social power of the SHEs may enhance their ability to gain their clients' trust and link them to services and the clients' perception of the SHE's skills. According to a framework advanced by Afulani et al., client perceptions of need, quality, and accessibility of birthing care are critical pathways to increasing uptake of skilled birthing care. (Afulani, Diamond-Smith, Golub, & Sudhinaraset, 2017) For this paper, the authors assume that increasing the social power of SHEs also increases clients' perception of accessibility and quality while ensuring high-quality care and appropriate referral. By providing a quantitative analysis of the change in SHE social power, this analysis will partially explain the mechanisms for elevating the status and influence of FLHWs SBAs in this case). The increased status and influence may contribute to the observed increase in uptake of skilled care to some extent. (Hossain et al., 2020)

The analysis will assess the increase in the social power of the SHEs. Implemented in a Sylhet District in Bangladesh, a rural area with low coverage of SBAs and high maternal mortality relative to the rest of Bangladesh, the SHE program developed a cadre of birth attendants among women residents of rural communities. Hossain et al. (Hossain et al., 2020) the program; the SHEs received certification as SBAs and were recognized as legitimate referral sources for complications to government facilities. They received training and supervision from government health personnel but were not government employees. SHEs charged clients on a fee-for-service basis, in a context where many women choose to pay unskilled private traditional birth attendants.

This analysis will assess the three significant elements of the social power of the SHEs: compensation, agency, and professional engagement. SHEs reported their income from SHE activities, allowing for the direct measurement of compensation. The SHE's decision-making power will represent the SHEs' agency. The frequency with which they attend and present at professional meetings will represent their recognized importance in the community as legitimate allied health workers.

Methods

Aim and design

The SHE program attempted to improve maternal health outcomes and increase the social power of the SHEs simultaneously. Other evaluations have demonstrated the success of the intervention in improving

health outcomes. This analysis seeks to test quantitatively whether the SHEs social power increased over time.

The assessment covered several elements related to their empowerment, including household decision-making, earnings, and control over their earnings. The program team interviewed the SHEs twice over the program's life, once shortly after providing services and once after the program. This analysis uses a fixed -effects panel analysis of change in time from beginning to end of the program.

Setting, participants, and processes

Data collection and management

The dataset presented here represents the interviews conducted among skilled health entrepreneurs. A total of 319 individuals received the SHE initial training. Program staff delivered the SHE questionnaire to SHEs during routine program operations, targeting all SHEs enrolled at the time. The project conducted the survey of SHEs in two rounds, one after the initial training, but early in the project implementation and another later in the project life.

At the first-round survey, 281 SHEs completed questionnaires. Of the remaining 37 who initially received the training, 30 dropped out of the program, six were unavailable at the time of the interview, and one SHE declined to conduct the interview. At the second-round interview, 260 SHEs completed the same questionnaire, while an additional 12 had dropped out, 16 were unavailable, and one declined the interview. Due to turnover and availability, 252 SHEs completed round one and round two surveys. The quantitative questionnaires covered SHE background socio-demographic characteristics, professional activities, income, decision-making in the home, some health-related behaviors, and exposure to gender-based violence. The data represent short panel data with observations of 252 individuals at two points in time.

This paper will assess the change over time in three aspects of social power among SHEs as the primary dependent variables. The analysis will compare each element at the Round 1 survey to those at the Round 2 surveys. The three aspects of social power assessed here are income, autonomy, and solidarity. The analysis will include primary education, age, religion, and other demographic factors as covariates.

Indicators and operationalization

Approaches to measuring increasing social power, or "empowerment," vary widely. For example, a 2014 review of women's empowerment found 60 eligible studies reporting women's empowerment as a measure and 19 domains identified as elements of empowerment. (Upadhyay et al., 2014) Especially in the context of frontline health and social services workers, a wide array of approaches to measuring this concept exist with no consensus on a single scale or metric as the best measurement. (Cyril et al., 2015; McClair et al., 2021) This analysis will assess SHEs' increased social power in three domains: economic independence, personal agency, and professional engagement.

Economic independence is the most straightforward variable to measure, but the relationship between income and social power is not simple. Increased household income alone is not sufficient to ensure increased social power. This analysis has access to the reported income from the woman's independent, professional endeavor (not her household wealth), a more relevant metric than household wealth.

Agency represents an individual's power over her actions. This analysis will use individuals' responses to questions on their decision-making power to signal autonomy. SHEs responded to questions about who decides to 1) seek reproductive health care for herself, 2) seek other health care for her, 3) seek health care for her children, with herself, her husband, herself and her husband jointly, and others as possible responses, and 4) seek contraception.

The number of times SHEs presented their results at their professional meetings will represent their professional engagement. The SHEs were required only to submit written reports. At the beginning of the program, few chose to present their results individually to the group. Over time, many more chose the more visible option of a solo presentation to a large group in the presence of superiors from the MOH. This change over time marks increasing confidence and professionalization among the SHEs. The SHEs increasing confidence and willingness to speak publicly can be considered a reasonable indication of increased professional engagement.

The summary assessment of the SHEs' social power was based on the variables that assess these three domains. Since responses in each domain used different strategies for quantification, the score summarized all measures into a single social score for the full regression analysis model.

The analysis recalculated decision-making into dichotomous variables. The woman herself making the decision was one response category, and all other options were the other category. This approach applied to all three decision-making variables: general healthcare seeking for self, care-seeking for children, and contraceptive use. The decision-making component of the total social power score was the average of the responses for the three decision-making topics.

Statistical analysis approach

This panel dataset allows the opportunity to measure the effects of variables that may have changed while other background characteristics remain constant among the same individuals being assessed at multiple episodes over time. This analysis first assessed the change in a simple significance test (t-test/chi-square) comparing initial to follow-up assessment for each element of the final social power score. The complete analysis of the combined social power score used fixed effects regression. Because variables such as age, social conditions, overall economic status of household and community, and availability of other options for care did not change significantly over this study in this setting, those variables were considered time-invariant. They were not included in the final model. Because the number of people living in SHEs' households did differ significantly from initial to final assessment, the full regression model did include that variable. The analyses comprised a chi-square for statistically significant differences between initial and final assessments on background characteristics and a fixed

effects regression on each element of the social power score and the complete social power score. Finally, the fixed effects regression results were stored as OLS regression results.

All analyses used Stata 16.1

Results

The demographic profile of the SHEs did not change significantly throughout the program. The percentage of SHEs 24 years or younger decreased slightly from 33.33% at Round 1 to 27.62% at Round 2. Accordingly, the percentage of SHEs older (35 years or older) increased slightly from 17.92% at Round 1 to 23.85% at Round 2. The median SHE age was 28 at Round 1 and 30 at Round 2. A significant majority of SHEs were married, with virtually no change from initial to final at 90.87% and 92.46%, respectively.

Similarly, most SHEs lived in a single-family household (rather than a joint household with multiple generations), increasing slightly from 90.87–92.46%. SHEs were predominantly Islam, and the remainder were Hindu; religion remained similar from round to round at 68.65% and 31.35%, respectively, both rounds. Educational attainment remained unchanged, with approximately 59% of SHEs (at both rounds) having completed primary or middle school and the remaining 41% have completed secondary school or beyond. None of these differences were statistically significant.

The number of people living in SHEs' households changed slightly. While the median number of household members remained five, the percentage of households with exactly five members increased from 18.65–62.30%, with a decreasing percentage of households with seven or more members.

Statistical significance tests on background characteristics determined which variables could be considered time-invariant. Only the number of people in the SHE's household changed significantly over this program. That was the only variable included as a covariant as a result.

Table 1
Change in elements of social power among SHEs

	Summary statistics n(%) / mean (95% CI)		**OLS B (SE)** *Initial to follow-up*
	Initial N = 252	Final N = 252	
Monthly income+	1901.63 (1616.26 2187.00)	7989.84 (7280.82 - 8698.85)	3053.001*** (707.1888)
Professional engagement (number of presentations)	10.41 (9.33–11.39)	16.10 (15.36–16.90)	13.48 * (0.2006)
Decision maker for women's health~			
Herself	64 (25.40)	87 (34.52)	2.36***
Others (includes husband, both, in-laws, etc.)	188 (74.60)	165 (65.48)	(0.2281)
Decision maker for children's health~			
Herself	64 (25.40)	100 (39.68)	2.34***
Others (includes husband, both, in-laws, etc.)	188 (4.60)	152 (60.32)	(0.2254)
Decision maker for contraception			
Herself	188 (74.60)	197 (78.17)	1.40***
Husband, both or N/A	58 (26.40)	49 (21.83)	(0.2065)
Social power score	**6.12**	**8.18**	**8.30*** (0.3179)**
Statistical significance - * p < 0.05; ** p < 0.01; *** p < 0.001			

Table 1 presents the fixed effects regression analysis results for each element of the social power score independently and for the composite social power score. SHEs earned 7659.78 takas (or roughly 90 USD) more per month at the endline than at the baseline. For reference, the average annual household income in Bangladesh as of 2016 was estimated at approximately 600 USD. (CECI, 2016) SHEs' professional engagement increased from an average of 10.41 presentations given per reporting period to one of 16.10. The decision-making variables all ranged from 0 to 4. The percentage of women making decisions

independently increased for all three decision making items: from 25.40–34.52% for seeking her own health care, from 25.40–39.68% for seeking health care for her children, and from 74.61–78.17% for contraceptive use.

All results were statistically significant.

The endline combined social power score was 8.65, ranging from 3 to 12, compared to 6.18 at baseline. That result was statically significant.

These results provide robust support to the argument that SHEs experienced a meaningful change in social power between the beginning of the SHE program and the end.

Limitations

This analysis used the concept of social power to describe the status of the SHEs in terms of economic, personal, and professional agency and independence. As discussed, empowerment is poorly defined, however. In addition, many concepts discussed above that are used in constructing both qualitative and quantitative measures of empowerment could be independently related to positive outcomes in either performance or stability of the workforce cadre. For example, self-efficacy and motivation are often construed as components of empowerment (Krishnaratne et al., 2021). Also, they have demonstrated associations with performance and such measures as retention and job satisfaction.

Another limitation is the inability to assess SHEs who left the program. All data reflect SHEs who remained in the program, and there were 67 SHEs who received the initial training and orientation but did not remain in the program. The use of panel data allows for direct assessment of changes resulting from participation in the SHE program while minimizing variability in the background characteristics. However, SHEs who left the program may have had characteristics in common that set them apart from those who remained. This gap may limit how widely these findings can be applied among groups with variations in background characteristics.

Finally, this study is less generalizable because it lacks a counterfactual. Many elements of the program approach essential for directly improving perceived availability and quality of services may also contribute to empowerment, so conducting an experimental design that eliminates the influence of increasing social power among SHEs might not be conceptually possible. However, further analysis of the available data on the domains of empowerment relevant to this setting may be helpful in further analyses. In addition, the use of panel data minimizes the effect of individual variation on the findings.

Discussion

These results illustrate that supporting a community-based midwife cadre can simultaneously expand accessibility and uptake of skilled birthing care and substantively change the role of these pivotal, predominantly female frontline health workers. The design of this intervention meaningfully increased

agency, economic power, and professional engagement among the SHEs. These changes occurred in the context of a project that also successfully improved birth preparedness, coverage with antenatal care, skilled attendance at birth, and complications. (Hossain et al., 2020; Sarker et al., 2019)

This analysis offers quantitative support for the many generalized calls to support frontline health worker "empowerment." (FHWC, 2018; WHO, 2018) Many of the more narrowly defined strategies to increase uptake of maternal health services involve increasing related phenomena: authentic participation, autonomy in decision-making, sense of community, and psychological power of women. Those solutions focused on technical and managerial solutions to improve FLHW performance on specific clinical or programmatic metrics improve outcomes in the short term, leading to improved health outcomes, perhaps partly because of improved social power dynamics.

The overall approach of the SHE program attempted to combine traditional technical training and managerial support with efforts to enhance autonomy, economic independence, and solidarity among the SHEs. The absolute magnitude and high probability of statistical significance of the change between the SHEs' social power score between the initial and final assessments provide strong evidence that the intervention design effectively increased the SHEs' social power, not only their technical skills. Other analyses support the approach's effectiveness in improving maternal and newborn health coverage and outcomes. (Sarker et al., 2019) This evidence supports continued attempts to scale and replicate FLHW models that include components explicitly focused on increasing the social power of the FLHWs.

Instead of viewing performance management as a mechanical, linear intervention, the SHE model grounded a client-centered care model in the SHEs' agency and capacity and communal support. The SHE model improved performance and health outcomes by blending more technical standards with elements increasing the social power of these predominantly female community-based providers by increasing their autonomy in decision-making, independent control of economic resources, and engagement in the community as professionals.

The effect of education on the social dynamics in this situation deserves comment. Fixed effects regression eliminates the need to control for a differential effect of education on social power within SHEs by comparing only those with similar education levels. All SHEs were required to have completed ten years of education. However, this level of education is higher than that of the average client, which could affect the SHEs' connection with their clients. There is an educational gap between SHEs and their clients, as 10.0% of women aged 25–29 in Sylhet district have attained the secondary school completion required of SHEs. (NIPORT/ICF, 2020)

Similarly, the income-generating aspect of the SHE program may create a gap in income between the SHEs and their clients, even if there had not been one before. These gaps may have influenced the relationship between SHEs and their clients in some inevitable ways. Still, the SHEs remain far more similar to their clients than nurses or physicians.

That relationship between SBA and client powerfully affects their decision to seek care. (Afulani, Phillips, Aborigo, & Moyer, 2019; Bohren et al., 2015; Shakibazadeh et al., 2018) A woman's choice to seek services from an SBA is a function of an interaction of many factors: her wealth and education, the clinical quality and geographic distance of skilled care, and her experience of the care available to her. (Jewkes, Abrahams, & Mvo, 1998; Sheferaw, Mengesha, & Wase, 2016; Stanton, Kwast, Shaver, McCallon, & Koblinsky, 2018) Afulani et al. (2017) conceptualize these relationships by describing *perceived* quality, need, and accessibility as meditating processes alongside wealth and education as proximal determinants. Thinking of the influence of women's perception of quality and accessibility as mediating pathways is offers a valuable framework to understand the effect of this intervention. The increase in social power may have been the mechanism for women's perception of increased quality, need, and accessibility of care. In addition to explaining additional variation in women's choices, these mediating pathways may be especially susceptible to short to mid-term interventions that improve perceived quality, geographic access, and trust between SBAs and clients.

Conclusion

Extending skilled birthing care to a setting outside a facility is critical only in settings where geographic distance, cultural incongruence, or the combination of both make a focus on achieving higher levels of facility birth unrealistic. In the long term, ideally, women's increasing wealth and educational level will create a drive for improved perceived quality (both meeting clinical quality standards and culturally acceptable) among private and public care and greater availability in geographically remote areas.

The great strength of the SHE model is that it contributes in the near- to mid-term and has benefits in the longer term, addressing underlying causes of poor health. A model like the SHEs provides acceptable, accessible care in remote areas can reduce maternal and infant mortality. In addition, these results suggest that approaches like the SHE model may also contribute to shifting gendered power dynamics in the community by investing this cadre of resident women with increased agency, recognition, and wealth.

As these authors argued in a previous paper (Curry, Sarker, Islam, & Laterra, 2021), innovative approaches to FLHW staffing may offer the potential for even more transformative change. The SHEs may potentially influence social norms by being models of women from the community who are recognized, health providers, and successful self-employed entrepreneurs. Combining more immediate improvements in coverage with maternal care and related health outcomes with the demonstrated enhancement in the social power of this critical group of women in the community, the SHE model can simultaneously improve health outcomes and contribute to a pathway to more meaningful change.

Abbreviations

FLHW	Frontline health workers
SBA	Skilled birth attendant

SHE Skilled health entrepreneurs

Declarations

- Ethics approval and consent to participate

All data collection conducted in association with the project described obtained consent for participation and received review and approval from the icccr,b institutional review board. No personal identifying information or biological data were collected. No experimental methods were used.

- Consent for publication

All authors have reviewed the final manuscript and consented to publication in BMC Reproductive Health journal.

- Availability of data and materials

The dataset used for this analysis is available as supplementary material with this article.

- Competing interests

The authors declare that they have no competing interests.

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- Authors' contributions

DC conducted the literature search, conducted the analysis, and was the lead writer for the manuscript. AI was the program manager for the project described and contributed significant review and feedback. BS, AL, IK, and MK contributed significant review and feedback. All authors read and approved the final manuscript.

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Figures

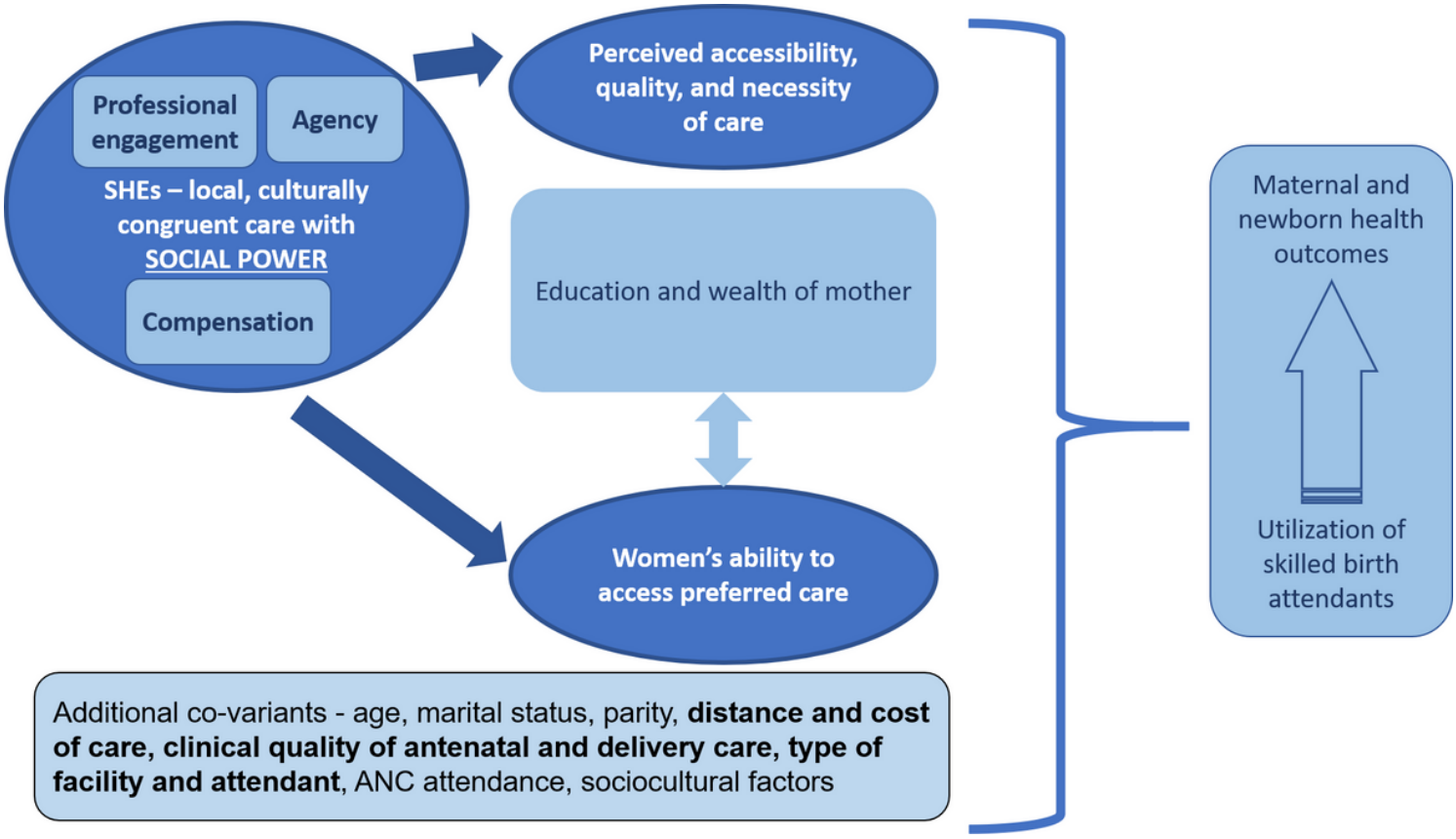

Figure 1

SHEs and the Effect of Increasing their Social Power

Supplementary Files

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- SHEProfilingDatabaseFinal.csv