

ORIGINAL RESEARCH ARTICLE

Rural Origin and Exposure Drives Ghanaian Midwives Reported Future Practice

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Abstract

A primary cause of Ghana's higher than global average maternal mortality rate is limited access to maternal care in rural areas. To date, few studies have examined how rural background/training of midwives impacts their future willingness to work in remote areas. The purpose of this paper is to describe the relationship between Ghanaian student midwife place of origin and rural training on their willingness to choose a future rural practice location. A cross-sectional computer-based survey was completed by 238 final year Ghanaian midwifery students from two public midwifery training schools located in urban Ghana between October and December 2009. The relationship between rural exposure and willingness to work in rural Ghana was analyzed using independent t-test, chi-square, and bivariate logistic regression. Participants who experienced a rural rotation (OR: 1.51, 95% CI: 0.71, 3.22) and those born in a rural area (OR: 2.24, 95% CI: 0.74, 6.75) resulted in greater odds ratio to choose rural practice following graduation. This study indicates an association between midwifery students' place of origin and training and their willingness to practice in a rural area after graduation. (*Afr J Reprod Health* 2014; 18[3]: 95-100)

Keywords: Midwifery, Ghana, human resources for health, maldistribution, rural practice, rural incentives

Résumé

La principale cause du taux de la mortalité maternelle au Ghana qui est plus élevé que la moyenne mondiale est l'accès limité aux soins de santé maternelle dans les régions rurales. À ce jour, peu d'études ont examiné comment le milieu rural / la formation des sages-femmes affectent sur leur volonté éventuelle de travailler dans les zones rurales éloignées. Le but de cet article est de décrire la relation entre le milieu d'origine de l'étudiante sage-femme ghanéenne et la formation en milieu rural sur leur volonté de choisir un emplacement futur de la pratique rurale. Une enquête transversale basée sur l'ordinateur a été menée auprès des 238 étudiants de dernière année dans deux écoles publiques de formation des sages-femmes ghanéennes situées au Ghana urbain entre octobre et décembre 2009. La relation entre l'exposition rurale et la volonté de travailler en milieu rural au Ghana a été analysée à l'aide d'un du t-test indépendant, chi-carré et la régression logistique à deux variables. Les participants qui ont subi une rotation rurale (OR: 1,51, IC 95%: 0,71, 3,22) et ceux qui sont nés dans une région rurale (OR: 2,24, IC 95%: 0,74, 6,75) ont abouti à un plus grand odds ratio de choisir la pratique rurale obtention de leur diplôme. Cette étude indique une association entre la place d'origine et la formation des élèves sages-femmes et leur volonté d'exercer leur profession dans une région rurale après leur formation. (*Afr J Reprod Health* 2014; 18[3]: 95-100)

Mots-clés: sages-femmes, Ghana, ressources humaines pour la santé, mauvaise répartition, pratique rurale, incitations rurales

Introduction

Ninety-nine percent of the world's women dying from complications during childbirth are from developing countries¹. Goal Five of the Millennium Development Goals (MDG 5) aims to reduce by three quarters maternal mortality and advocates all births be attended by skilled providers¹. Ghana is still far from meeting these goals. Ghana's maternal mortality rate is currently

estimated at 350 deaths per 100,000 live births². Maternal mortality rates have been shown to directly correlate with the density of skilled birth attendants³. In 2008, the most recent year for which data are available, only 57% of all births country-wide in Ghana were attended by a skilled provider⁴.

The shortage of skilled birth attendants in rural areas has a profoundly negative effect on the survival rates of Ghanaian women. In a survey

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conducted by the World Health Organization (WHO)⁴ the majority of deliveries in Ghana (62%) occurred in rural areas, and only 43% of these births were attended by a skilled provider. This is due in part to a vast shortage of health care professionals in the rural areas.

A mal-distribution of healthcare facilities exists in Ghana with 40% of Ghanaians living more than fifteen kilometers away from basic health care services⁵. Further, while sixty-six percent of the country's population lives in rural areas, only 15% of the physician workforce practices in a rural setting³. Increasing the number of skilled birth providers in rural regions, including midwives, is crucial to reduce maternal mortality by 75% by 2015⁶.

Limited data exist regarding how rural background and/or training may impact midwifery students' practice location after graduation. A review of the literature within a variety of healthcare disciplines was conducted to identify the motivating factors for health care providers to practice in a rural setting. The majority of articles found focused on nurses and physicians, with minimal information related to midwifery professionals.

The purpose of this paper is to examine the relationship between Ghanaian student midwife place of origin and rural training on their reported willingness to choose a rural practice location following graduation.

Literature Review

Two recurrent themes were found within the literature describing the motivators for physicians and nurses to practice in rural areas: 1) rural origin positively affects the likelihood of rural practice⁷⁻¹⁵; and 2) rural training experiences positively influenced students from both rural and urban origins to consider rural practice^{10-13,16,17}.

The most common theme found was rural origin, defined as growing up in a rural area, or living in a rural area for a significant period of time prior to any educational training. Rural origin significantly increases the likelihood of working in a rural region when compared with health care providers originating from urban areas, for both physicians and nurses. Findings from a study of

4,259 Australian physicians found physicians from rural origins were three times more likely to choose rural practice than their urban-origin counterparts⁷. This finding was similar to results from South Africa, Germany, the United States, and an additional study from Australia^{9,11-13,15}. Two studies conducted in the United States/Canada and Australia concluded that in addition to rural origin, having family and friends who live in a rural area also positively influences nurses rural practice choice^{8,10}.

In Uganda, Kaye et al¹⁷, reported rural experiences helped develop a positive attitude toward pursuing rural practice by increasing student skill level and confidence within a rural context. With the experience of rural training, students from both urban and rural backgrounds may develop an increased interest in working permanently in a rural environment¹⁴. In a survey of rural Canadian physicians, those who originated in urban areas but chose rural practice cited rural medical rotations as a significant factor influencing their choice of practice location¹⁶.

Based on our review of the literature, we hypothesized that midwifery students originating from a rural area and/or having a rural training experience during their educational program would be associated with a reported willingness to practice in rural Ghana following graduation.

Methods

Sample and Setting

This cross-sectional study consisted of a computer based survey completed by 238 third year Ghanaian midwifery students from the two largest midwifery education programs in Ghana. The schools are located in Ghana's two largest cities, Accra and Kumasi. Third year students were chosen because they were within their final year of studies and considering future employment options. Ethical approval was attained from the Ghana Health Service Ethical Review Committee, the University of Ghana Medical School, the Kwame Nkrumah University of Science and Technology Committee on Human Research, Publications and Ethics, and the University of Michigan Institutional Review Board.

Data Collection

Posters describing the opportunity to participate in the study were placed around campus and announcements were made in classes attended by third year students during the month of August 2009. Prior to data collection, informed consent was obtained. The computerized survey took approximately 30-45 minutes to complete. Upon completion of the survey, students received 10 Ghana Cedis (approximately \$7 USD).

Data Analysis

Data were analyzed with SPSS Version 19.0 (SPSS Inc., Chicago, IL). Although not all encompassing as a descriptor of rural versus urban population, for the purposes of this article the terms rural and urban were defined by population density. A rural area was defined as a settlement with less than 5000 population and urban area was a settlement with population more than 5000.

For analysis purposes, where appropriate, the original multivariate data were dichotomized. For example, the outcome variable of interest, willingness to work in a rural area was coded as yes if the participant responded "I am likely to work in a deprived area", or "I will definitely work in a deprived area", and as no if they responded "I will definitely not work in a deprived area", "I am unlikely to work in a deprived area", or "rather not say".

The analysis included the following predictor variables: place of birth, place of residence immediately prior to attending midwifery school, living in a rural area after age five years, experiencing a rural rotation during training, and number of weeks the rural rotation lasted. The relationship between each predictor variable and the dependent categorical variable willingness to consider rural practice, was analyzed using chi-square, and Student t-test. Odds ratios were calculated using separate bivariate logistic regression models to examine the relationship of the predictor variables to the dependent variable. The odds ratios were generated to allow comparison between students with rural experience and those without rural experience.

Of the 238 students participating in the survey, 234 cases were utilized for the multiple bivariate

logistic regression analysis. Four participants did not answer the question regarding length of rural rotation, and thus were excluded from the logistic regression analysis.

Result

All participants were female and ranged in age from 18 to 33 years, with a mean age of 22.5 years and a median age of 22 years. Of the participants, 8 (3%) were married, 4 (2%) were not married but lived with their partners, 135 (57%) were in a relationship but did not live with their partners, 89 (37%) were not in a relationship, and 2 (1%) chose not to identify their relationship status.

Of the 238 participants completing the computerized survey, 126 experienced a rural rotation lasting one week or greater during their midwifery training program. One hundred and eight participants did not experience any rural placements lasting greater than one week during their entire training. There were four non-respondents. Table 1 describes the number of weeks each participant experienced a rural rotation (range 0-21 weeks).

Table 1: Length of time spent by midwifery students in a rural rotation

| Length of time spent in rural rotation (n=234*) | Number of students | % of students |
|-------------------------------------------------|--------------------|---------------|
| None | 112 | 47.1% |
| 1-5 weeks | 67 | 28.2% |
| 6-10 weeks | 0 | 0% |
| 10-15 weeks | 48 | 20.2% |
| 16-20 weeks | 10 | 4.2% |
| Over 20 weeks | 1 | .004% |

*There were four non-respondents

The relationship between how many weeks a student spent in a rural area during their educational training and their willingness to consider work in a rural area after graduation was analyzed using an independent t-test. Of the 126 students who experienced at least one week in a rural rotation, 52 stated they were willing to consider rural work, while 74 stated they were not willing to consider rural work. While the association between length of rural rotation and

student willingness to consider rural work was not found to be statistically significant ($p=0.761$), it is important to note only 126 of the 238 students surveyed indicated they had experienced a rural rotation of one week or greater. Forty-one percent ($n=52$) of the participants in our study who experienced a rural rotation greater than one week stated they were willing to work in a rural environment following graduation.

The relationship between the predicting variables and willingness to work in a rural area was analyzed using logistic regression (Table 2). Those students who reported a rural rotation

during their education program greater than one week were, in general, more likely to be willing to work in a rural area following graduation (odds ratio [OR] 1.51, 95% confidence interval [95% CI]: 0.71-3.22). Participants born in a rural area had greater odds of choosing rural practice than those born in an urban area (OR: 2.24, 95% CI: 0.74-6.75). Participants in our study who lived in rural Ghana prior to beginning their midwifery education programs were less willing (OR: 0.46, CI: 0.11-1.96) to work as a midwife in rural Ghana than those who did not live in rural Ghana just prior to entering their training program.

Table 2: Relationship between each experience and willingness to work in rural Ghana

| Willingness to work in rural Ghana (n=234) | Respondents answering yes n (%) | Unadjusted odds ratio | 95% confidence interval | p-value |
|--------------------------------------------|---------------------------------|-----------------------|-------------------------|---------|
| Rural born | 10 (11%) | 2.24 | (0.74-6.75) | 0.152 |
| Rural after 5 years of age | 38 (43%) | 1.30 | (0.73-2.32) | 0.274 |
| Rural prior to midwifery education | 5 (6%) | 0.46 | (0.11-1.96) | 1.000 |
| Rural rotation | 52 (58%) | 1.51 | (0.71-3.22) | 0.196 |

Discussion

Our findings are congruent with the literature indicating a relationship between willingness to work in a rural area and being born in a rural area, living in rural areas after the age of five years, and experiencing a rural rotation. Although the findings suggest those students who spent time living in a rural area after the age of five and those born in a rural area reported being more willing to work in a rural Ghana after graduation than those who did not, the results did not attain significance. The only participants less willing to work in a rural environment were those who lived in a rural area just prior to attending midwifery training school. Although only 19 (8%) participants were born in a rural area and 13 (5%) lived in a rural area prior to their midwifery training education, the results indicate students from rural areas may be more willing to practice in a rural environment than those from urban areas.

The current study supports suggestions in the literature, such as putting more effort into recruiting students with a rural background to improve distribution¹². Rabinowitz et al¹² found that increasing the number of medical students who grew up in rural areas is not only extremely effective, but programs that do not include this

recruitment technique may be unsuccessful at increasing the number of rural physicians. Hegney et al¹⁰ recommend Australian universities prioritize admission for students with a rural background to help increase the number of rural nurses.

The benefit of rural rotations to shape rural skills, develop confidence, and increase the likelihood of future rural practice for both urban and rural origin students is also important. Changing educational curricula to support rural clinical rotations is therefore an important tool for rural recruitment of qualified health care practitioners¹⁶. The findings from our study support Bushy and Leipert⁸ who suggest establishing a nursing curriculum based on rural nursing theory, including guest lecturers from rural practitioners as well as an in-depth rural clinical experience, allowing students to experience the joy of rural nursing while increasing their confidence to practice in a rural environment.

Limitations

There are several limitations within this study. Only 13 (5%) students surveyed lived in a rural region prior to attending the training school, and only 8% ($n=19$) of the students were born in a rural area. This study was conducted within urban-

based midwifery training schools which may reflect a systematic selection bias. Other factors which may influence a students' desire to work in a rural area after graduation such as whether the student had family and/or friends from a rural area or cultural influences were not examined. The study lacks the statistical power to determine difference that might exist between rural and urban practice.

Conclusion

The results of this study identify a positive association between rural background and training and Ghanaian midwifery students' reported willingness to work in rural Ghana after graduation. Further research on this topic with a larger sample of student participants from more diverse schools and backgrounds is needed to confirm these results. Only by conducting a longitudinal study in which midwifery students are followed over time could a cause/effect relationship be determined. Research also needs to be conducted to examine the motivating factors for current Ghanaian midwives who choose a rural practice location. Midwives must be recruited and retained in rural areas if Ghana is to meet MDG #5, reduction of maternal mortality and increase access to skilled birth professionals by 2015.

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Contribution of Authors

JRL, PB, SR, and EN jointly conceived the study. SR, EN, and PB carried out data collection under the supervision of JRL. All authors were involved

in the interpretation of study findings. JRL, LL, and SR wrote the first draft of the manuscript. All authors reviewed and critically revised the manuscript for important intellectual content and agreed to submit the manuscript for publication.

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