Int J Public Health (2014) 59:189–196
DOI 10.1007/s00038-013-0511-0

SSPH+ SWISS SCHOOL OF PUBLIC HEALTH +

BRIEF REPORT

Overcoming the perceived barriers to health care access among single mothers in coastal Kenya

J. J. Cohen · M. Blevins · A. Mapenzi · L. Reppart · J. Reppart · R. Mainthia · C. W. Wester

Received: 13 May 2013 / Revised: 16 August 2013 / Accepted: 29 August 2013 / Published online: 21 September 2013
© Swiss School of Public Health 2013

Abstract

Objectives This study assesses the effects of a comprehensive empowerment intervention onbarriers to health care access for single mothers in coastal Kenya.
Methods We surveyed 41 single mothers who completed a pilot empowerment program and 60 single mothers who had not yet initiated the program. Comparisons were made usingbivariate tests of association and logistic regression.
Results Women in the pilot program were less likely to report transportation costs (OR = 0.26; 95 % CI [0.11–0.59], p = 0.001) and hospital fees (OR = 0.22 [0.10–0.49], $p < 0.001$) asbarriers. Pilot program mothers were more likely to visit a public hospital for theirchildren (OR = 4.38; [1.58–12.1], p = 0.004) and self (OR = 4.70; [1.54–14.4], $p = 0.007$)when ill.
Conclusions Empowerment programs can alleviate perceived barriers to health care amongvulnerable populations.

Keywords Africa · Rural Kenya · Barriers to health care · Health care utilization · Female · Empowerment

Introduction

In Malindi, Kenya, there is a great deal of stigma surrounding single motherhood. As a result, single mothers are often discriminated against, shunned, or even ostracized from their communities leading to poverty and poor access to resources. Many studies have shown that social and financial burdens create barriers to health care access and utilization of basic services (Bloom et al. 2001; Glei et al. 2003; Montgomery and Hewett 2005; Smith et al. 2004; van den Broek et al. 2003; World Bank 1999).

Research in resource-limited settings has shown that families with limited resources are more susceptible to barriers to health care access such as geographic distance, lost time for work, and health literacy. One study in rural western Kenya found that for every 1 km increase in distance from a clinic, the rate of clinic visitation for mothers and their children decreased by 34 % (Feikin et al. 2009). Another study from coastal Kenya reported that 50.8 % of rural adults were likely to lose one income day as compared to 27.9 % of adults residing in urban areas (Chuma et al. 2007). In Tanzania,

Laura Reppart: Deceased.

J. J. Cohen (✉) · R. Mainthia
Vanderbilt University School of Medicine, Nashville, TN, USA
e-mail: jordan.j.cohen@vanderbilt.edu

R. Mainthia
e-mail: r.mainthia@gmail.com

M. Blevins
Department of Biostatistics, Vanderbilt University School of Medicine, Nashville, TN, USA
e-mail: Meridith.blevins@vanderbilt.edu

A. Mapenzi · L. Reppart · J. Reppart
Caris Foundation International, Malindi, Kenya
e-mail: angelamapenzi.mwarandu@facebook.com

J. Reppart
e-mail: Jim.reppart@carisfoundation.org

C. W. Wester
Division of Infectious Diseases, Vanderbilt University School of Medicine, Nashville, TN, USA
e-mail: William.wester@vanderbilt.edu

M. Blevins · C. W. Wester
Vanderbilt Institute for Global Health, Nashville, TN, USA

C. W. Wester
Department of Immunology and Infectious Diseases, Harvard School of Public Health, Boston, MA, USA

children of wealthier families were significantly more likely to receive antimalarial medications and antibacterials for pneumonia (Schellenberg et al. 2003). One survey documented that 25 % of adults presented for routine medical care, but if one evaluated the subgroup of adults having the highest quartile of income, nearly twice as many adults (48 %) presented for medical care when ill. (Valdivia 2002; Biritwum et al. 2000). Inequity also exists between rural and urban health care access since more private and general hospitals are located in urban centers (Ityavyar 1998).

One successful intervention in coastal Kenya focused on improving access to treatment for malaria. The Kenya Red Cross Society implemented a program utilizing Community Health Workers (CHWs) in each village to improve the diagnosis and management of malaria in this at-risk population. Following the implementation of this program, poorer households utilized the CHWs more frequently (from baseline 2 to 34 %). Families from villages with fewer than 200 households were also more likely to use CHWs. In addition, individuals utilizing the services of CHWs were nearly six times (5.7-fold) more likely to receive appropriate treatment within 24 h (Kisia et al. 2012). In essence, this unique intervention improved health care access for the most rural/poorest households.

Methods

Empowerment intervention

In October 2008, Caris Foundation International in Malindi, Kenya began a pilot project to empower single mothers to become self-reliant. The pilot program used a multi-factorial approach including food relief, health care, education and small business training. Inclusion criteria for the program were: women with at least one child who had their first child before age 18, no support from the father of any children, currently living in Malindi District of Kenya, and low socio-economic status (determined by intake survey). Exclusion criteria included: active pregnancy, full-time employment or life circumstances that would prevent attendance in weekly classes. Educational courses occurred twice per week and focused on topics such as treating mosquito nets with insecticide, HIV/AIDS prevention and treatment, sexual health and decision-making, family planning, nutrition and child care. Caris Foundation provided free medical care at Malindi District Hospital as well as free medications for the women and their children at local pharmacies.

Participants

The program recruited 60 single mothers during September 2008 and was initiated in October 2008. In 2011, an expansion program was launched to recruit additional single mothers on a rolling basis by incorporating them into microfinance savings groups started by the pilot group of single mothers. Expansion group mothers were administered the survey prior to receiving program benefits, in essence serving as a control group of single mothers. This research survey was administered during May 15–June 31, 2011.

Survey data collection

The structure of the survey ("Appendix 1") included questions about basic demographics, health care usage and barriers that exist to accessing care. The survey was administered in Swahili (native language). Due to limited sample size available of single mothers in the program, the survey was not piloted directly with them. Instead, the local Caris field workers (women from Malindi with extensive knowledge of the language and culture) piloted the survey and made edits to word choice and questions to optimize cultural relevance. Study data were collected and managed using secure REDCap electronic data capture tools hosted at Vanderbilt University (Harris et al. 2009).

This study was approved by the Vanderbilt Institutional Review Board and by local ethical review boards at Twafiq Hospital and the Caris Foundation International.

Statistical methods

The primary exposure was pilot versus expansion groups. Public health outcome variables of interest included: perceived barriers to health care and the location of medical care for illness. Descriptive statistics were used to summarize patient characteristics by program participation. Multivariable proportional odds models were used to assess the relationship between perceived barriers to care with group, age, maternal education, and number of children. Logistic regression models were used to assess the relationship between Malindi district hospital utilization with group, age of mother, maternal education, number of children, and distance traveled. To relax linearity assumptions, we modeled some continuous variables using restricted cubic splines. Missing values of predictors were accounted for using single imputation; all predictors had <6 % missing data. Predictors were selected a priori. R software 2.13.1 was used for all data analyses and analysis scripts are available at biostat.mc.vanderbilt.edu/ArchivedAnalyses.

Results

Study population

60 women in the pilot program were deemed eligible for participation; however, only 42 (70 %) of 60 were

able to be located. Of the 18 women (30 %) enrolled in the pilot program who were not located for this study, six women (10 %) dropped out of the program in 2008, two (3 %) dropped out in 2009, four (7 %) left in 2010, and another six (10 %) were "inactive" in 2010, meaning they were lost to follow-up. From among the 42 in the pilot program that were located; 41 (98 %) of 42 completed the survey. 61 single mothers who were not in the pilot program but were in the expansion group were approached for the study and 60 (98 %) completed the survey. Thus, sample size was 101 single mothers.

Baseline characteristics

The women in the pilot program were younger [median (interquartile range (IQR)) age 22 (20–25)] than the women in the non-pilot group [median (IQR) age 27 (21–38)]. Both groups had a median number of three children. The pilot group had a similar education level [median (IQR) 5 years (3–7)] as the non-pilot group [median (IQR) 4 years (0–7)]. Pilot versus non-pilot travel to health care services included 60 vs. 73 % for 0–5 km, 30 vs. 20 % for 6–10 km, and 10 vs. 7 % for > 10 km. A majority of women were self-employed (63 %) with 19 % unemployment. The median monthly income reported was 2000 Kenyan Shillings (KES) (IQR: 275-3000; 1 USD = 86 KES on June 1, 2011). Inventory of basic household resources included: home rental (23 %), thatched (55 %) and metal (45 %) roofs, public tap (60 %) and well (29 %) water sources, and indoor (9 %) or outdoor (34 %) latrines.

Perceived barriers to health care

Women in the pilot program compared to those women not in the program were less likely to perceive cost of transportation (odds ratio (OR) = 0.26; 95 % CI [0.11, 0.59], $p = 0.001$) and hospital fees (OR = 0.22 [0.10, 0.49], $p < 0.001$) as barriers to accessing health care. There was no significant difference detected between the two groups for lost time for work (OR = 0.49 [0.13, 1.82], $p = 0.29$), lost time for chores (OR = 1.05 [0.13, 8.23], $p = 0.965$), fear of doctors (OR = 1.86 [0.22, 15.85], $p = 0.57$), or distance to facility (OR = 0.53 [0.24, 1.17], $p = 0.12$). There was an association between larger families and lower likelihood to perceive hospital fees as a barrier to accessing health care (OR = 0.70 [0.50, 0.96]) (Table 1).

Impact of empowerment program on hospital utilization

Independent of age, maternal education, family size, and distance to health services, single mothers in the pilot program had over four times the odds of going to a public hospital for their child(ren) (OR = 4.38 [1.58, 12.13], $p = 0.004$) and self (OR = 4.70 [1.54–14.38], $p = 0.007$) when ill. Older maternal age is significantly associated with seeking hospital care for children when ill (OR = 1.43 per 5 years of age [1.10–1.86], $p = 0.007$) and increased hospital usage for self when ill (OR = 1.24 per 5 years of age [0.99, 1.57], $p = 0.064$) (Table 2).

Discussion

We used a comprehensive survey to evaluate the effects of an empowerment program for single mothers on perceived

Table 1 Proportional odds models: perceived barriers to health care (Kenya 2011)

	Cost of transportation	Lost time from work	Lost time for chores
Pilot	0.26 (0.11–0.59)	0.49 (0.13–1.82)	1.05 (0.13–8.23)
Age (years)			
20 (reference)	1	1	1
25	1.30 (0.84–2.00)	2.36 (0.93–5.99)	2.12 (0.43–10.50)
30	1.31 (1.00–1.71)	1.53 (0.89–2.63)	1.38 (0.54–3.53)
Maternal education (per year)	1.81 (0.93–3.51)	0.84 (0.28–2.50)	0.29 (0.05–1.74)
Children at home (per 1 child)	1.31 (0.98–1.75)	0.78 (0.46–1.34)	1.09 (0.55–2.16)
	Hospital fees	**Distance to facility**	**Fear of doctors**
Pilot	0.22 (0.10–0.49)	0.53 (0.24–1.17)	1.86 (0.22–15.85)
Age (years)			
20 (reference)	1	1	1
25	1.11 (0.76–1.62)	1.13 (0.74–1.72)	4.42 (0.62–31.25)
30	1.03 (0.82–1.30)	1.20 (0.92–1.56)	2.46 (0.75–8.03)
Maternal education (per year)	0.80 (0.42–1.54)	1.45 (0.73–2.85)	0.87 (0.16–4.85)
Children at home (per 1 child)	0.70 (0.50–0.96)	1.09 (0.82–1.44)	0.70 (0.23–2.10)

Proportional odds ratios (95 % CI). For some models, there is evidence that age ($p < 0.05$) is non-linear with the proportional log-odds of increased barrier; thus age is modeled using a restricted cubic spine with three knots

Table 2 Logistic regression models: malindi district hospital use (Kenya 2011)

	For child when ill		For self when ill	
	OR (95 % CI)	*P* value	OR (95 % CI)	*P* value
Pilot	4.38 (1.58–12.13)	0.004	4.70 (1.54–14.38)	0.007
Age (per 5 years)	1.43 (1.10–1.86)	0.007	1.24 (0.99–1.57)	0.064
Maternal education (per year)	1.54 (0.68–3.48)	0.298	1.73 (0.72–4.14)	0.221
Children at home (per 1 child)	0.70 (0.46–1.06)	0.095	0.71 (0.48–1.05)	0.084
Distance travel for health services		0.299		0.088
0–5 km (reference)	1		1	
6–10 km	2.45 (0.77–7.77)		1.80 (0.54–6.03)	
>10 km	0.98 (0.19–5.14)		0.23 (0.05–1.15)	

barriers to health care in rural, coastal Kenya. We found that women who finished this program (pilot group) had about 75 % decreased odds to perceive cost of transportation and hospital fees as barriers to accessing health care.

Barriers to health care access such as hospital fees, distance to facility, and cost of transportation affect populations throughout the developing world, especially in rural communities. In Kenya, the introduction of user fees for health services caused a reduction in outpatient visits by 27 % at provincial hospitals, 46 % at district hospitals and 33 % at health centers. When these user fees were eliminated, three regional and four district hospitals returned to near pre-implementation levels of attendance (Willis and Leighton 1995). As part of the empowerment program, the Caris Foundation paid for all hospital fees for the single mothers. As a result, the pilot group found these fees less of a barrier than the non-pilot women. Thus, eliminating hospital fees altogether may reduce barriers to access and increase utilization of health services.

Cost of transportation has not been as robustly studied. In South Africa, it was estimated that 49, 41 and 10 % of people use walking, public transportation, and their own transportation, respectively, to access health care. In the rural area of Hlabisa in Kwazulu-Natal, the percentages are 61, 38, and 0.4 %, respectively (Smith et al. 1999). The district of Hlabisa is poorer and more isolated than the rest of the country, which translates to less reliable means of public transportation. The coastal areas of Kenya are typically more socioeconomically disadvantaged than the inland areas and affordable public transportation is limited. This leaves people paying for private means of transportation such as motorbikes or small taxis to get to health clinics. It follows that cost of transportation would be a more significant barrier to health care access for persons residing in these rural areas. In this study, we found that single mothers in the pilot group were less likely to report cost of transportation as a barrier to health care than women in the non-pilot group. Thus, women in the pilot program were likely using money earned from their small businesses to pay for transportation, alleviating this barrier to health care access.

The main limitation to this study was the sample size. The low sample size of the pilot group was due primarily to single mothers who dropped out of the program from 2008 to 2010. Six more were "inactive" in 2010, meaning that they were no longer in regular contact with the Caris Foundation. Due to time and financial constraints, women who left the program were not located for exit interviews to understand why they left the program. This accounted for twelve of the eighteen women who were not interviewed. This could have led to some sampling bias in that the women who were interviewed were more committed to the program and self-improvement in general.

Conclusions

The empowerment program was successful in alleviating perceived barriers to health care access for single mothers in Malindi, Kenya. This study showed that by participating in the program, which included provision for hospital fees, the women perceived cost as less of a barrier. Elimination of user fees, especially for socioeconomically disadvantaged, rural populations would alleviate this barrier and hopefully lead to better health outcomes. Additional research is needed to identify novel means of alleviating cost as a barrier. Solutions such as home health care, satellite health centers in rural areas and community health workers should be explored.

Acknowledgments We want to formally acknowledge and thank all the single mother study participants. We also would like to formally acknowledge Jim and Laura Reppart, the Kenyan Ministry of Health, the staff of the Caris Foundation International, the Vanderbilt University Medical School Emphasis Program, the Arnold P. Gold Foundation and the Vanderbilt Institute for Global Health (VIGH) for their ongoing work and support of this study.

Appendix 1. Barriers to care survey (Kenya 2011)

Demographic information

Demographic Information

Name: ____________________
Age: _______
Ages of your children:

1. 1st child: _____years _____months 5. 5th child: ______years ______months
2. 2nd child: _____years_____months 6. 6th child: ______years_______months
3. 3rd child: _____years _____months 7. 7th child: ______years_______months
4. 4th child: _____years _____months 8. 8th child: ______years_______months

How many of your children are living with you now? __________________
What is your location in Malindi? __________
What is the name of your village? ___________
Where do you stay? (circle one from each row)

1. Type: Family homestead Rented house
2. Roof: Makuti Mabati
3. Water source: in house public tap river/stream well water
4. Latrine: indoor outdoor none
5. Other people in your home? # adults______ #children_______

What is your level of education?

1. # of years primary: _____________
2. # of years secondary: _____________

Employed (circle one): full time part time casual laborer no work self-employed
How much do you make on average per month? ____________Ksh

I am now going to ask you about how you access health care.

1. Where do you **most often** go for health services (name)? ________________________

2. Where do you go first when you are sick?
   a. Public hospital
   b. Private hospital
   c. Government dispensary
   d. Private clinic
   e. Chemist
   f. Traditional Healer/Herbalist
   g. Other (specify):__________

3. Why do you prefer this type of facility (open ended)?

4. What is the nearest hospital or clinic to your home? Name: ________________
   a. What type of health care facility is this?
      i. Public hospital
      ii. Private hospital
      iii. Government dispensary
      iv. Private clinic
      v. other: ______________

   b. How far is this hospital/clinic from your home?
      i. 0-5km
      ii. 6-10km
      iii. 11-15km
      iv. greater than 15km
      v. other (specify):_____________

c. Is this hospital or clinic able to satisfy all of your health needs?
   i. Yes
   ii. No

d. If no, why not? (open ended)

e. If no, where **else** do you go for health services? (open ended)

5. How far do you travel **on average** to get health services?
   a. 0-5 km
   b. 6-10km
   c. 11-15km
   d. Greater than 15km

6. How often do you use each of the following means of travel to get to the health care facility?

	Never	Rarely	Sometimes	Often	Always
a. on foot	1	2	3	4	5
b. tuk tuk	1	2	3	4	5
c. piki piki	1	2	3	4	5
d. boda boda	1	2	3	4	5
e. matatu	1	2	3	4	5
f. other: ___________	1	2	3	4	5

7. If you use any of the following services, how much does it cost you in KSh to go and return from the health facility?
   a. Tuk tuk: _____Ksh
   b. Piki piki: _____Ksh
   c. Boda boda: _____Ksh
   d. Matatu: _______Ksh
   e. Other (specify): ________: _____Ksh

8. How often does each of the following obstacles prevent you from accessing health care?

	Never	Rarely	Sometimes	Often	Always
a. cost of transportation	1	2	3	4	5
b. distance to facility	1	2	3	4	5
c. lost time for work	1	2	3	4	5
d. lost time for house chores	1	2	3	4	5
e. no one to watch children	1	2	3	4	5
f. hospital fees	1	2	3	4	5
g. other (specify): __________	1	2	3	4	5

9. What else makes it difficult for you to access care? Please tell us more about the reasons you cannot get to the health care facility when you are sick, injured or in labor. (open ended)

10. What do you think would help alleviate these difficulties? (open ended)

Now I am going to ask you some questions about your medications

11. How often does the hospital or clinic provide all the medications you need when you are sick or injured?

Never rarely sometimes often always

12. If the hospital or clinic does not have medications, how likely are you to get the medications on your own?

    Never rarely sometimes often always

13. If you do not always get your medications, please say how often each of the following prevents you from getting medications.

	Never	Rarely	Sometimes	Often	Always
a. Cost of medication	1	2	3	4	5
b. Distance to the chemist	1	2	3	4	5
c. Cost of transportation	1	2	3	4	5
d. Other (specify): _______	1	2	3	4	5

14. What do you think would help you to get your medications? (open ended)

I am now going to ask you about the times you have been pregnant.

15. How many times have you been pregnant in your life? ______________

16. I am now going to ask you some questions about each of your pregnancies. **(FIELD WORKERS: Please fill in the pregnancy chart on the next page. The numbered columns along the top are for each time she was pregnant. Only fill out as many columns as times she was pregnant. For each time she was pregnant, go down the column and check one box for each questions about her pregnancy in the left column)**

Now I am going to ask you some questions about the times that you were sick in the past year.

17. What chronic conditions do you have? ________________________
18. Other than your chronic condition, how many times were you sick or injured in the past 12 months? __________

19. I am going to ask you to remember the times over the past 12 months that you were sick or injured. I will ask you more specifically about each of those times. (**FIELD WORKERS: Please fill in the illness and injury chart on the next page. The numbered columns along the top are for each time this person was sick or injured in the past 12 months. Please only fill in as many columns as times she was sick. For each time she was sick or injured, go down the column and check one box for each question about the illness in the left column.)**

Please answer the following questions about your children's health care.

20. Where do you **most often** take your children to get medical care when they are sick or injured?
    a. Malindi District Hospital
    b. Private hospital
    c. Government dispensary
    d. Private clinic
    e. Chemist
    f. Traditional Healer/Herbalist
    g. other (specify): _______________________

21. In the past 12 months how many times were your children sick or injured? ____________

22. Of the times they were sick or injured in the past 12 months, how many of those times did you take them to seek medical care? _______________

23. Of the times there were sick or injured in the past 12 months, how many of those times did you **not** take them to seek medical care? ______________

24. In the past 12 months, how often did your children have the following medical issues?
    a. stomach problems? ________
    b. respiratory problems? ________
    c. malaria? _________
    d. fever? ____________
    e. physical trauma? ___________
    f. other (specify): ____________? ____________

The following questions are open ended. They are for you to discuss things that we have not talked about already or to expand upon questions that we already asked.

25. Please discuss anything that we have not talked about that relates to the questions already discussed.

26. What do you feel are the largest unmet health needs in your community?

References

Biritwum RB, Welbeck J, Barnish G (2000) Incidence and management of malaria in two communities of different socioeconomic level in Accra, Ghana. Ann Trop Med Parasitol 94:771–778

Bloom SS, Wypij D, Das Gupta M (2001) Dimensions of women's autonomy and the influences on maternal health care utilization in a North Indian City. Demography 38(1):67–78

Chuma Jane, Gilson Lucy, Molyneux Catherine (2007) Treatment-seeking behaviour, cost burdens and coping strategies among rural and urban households in Coastal Kenya: an equity analysis. Tropical Med Int Health 12(5):673–686

Feikin DR, Nguyen LM, Adazu K, Ombok M, Audi A, Slutsker L, Lindblade KA (2009) The impact of distance of residence from a peripheral health facility on pediatric health utilisation in rural western Kenya. Trop Med Int Health 14(1):54–61

Glei DA, Goldman N, Rodriguez G (2003) Soc Sci Med 57(12):2447–2463

Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, Conde JG (2009) Research electronic data capture (REDCap)—a metadata-driven methodology and workflow process for providing translational research informatics support. J Biomed Inform 42(2):377–381

Ityavyar D (1998) Health Inequalities in Nigeria Lagos:Pergamon Press Plc

Kisia et al (2012) Factors associated with utilization of community health workers in improving access to malaria treatment among children in Kenya. Malaria Journal 11:248

Montgomery MR, Hewett PC (2005) Urban poverty and health in developing countries: household and neighborhood effects. Demography 42(3):397–425

Schellenberg AJ, Victora CG, Mushi A (2003) Inequities among the very poor: healthcare for children in rural Tanzania. Lancet 361:561–566

Smith M, Solanki G, Kimmie Z (1999) The second Kaiser Family Foundation survey of health care in South Africa. The Hendry J Kaiser Family Foundation, Washington

Smith K, Dmytraczenko T, Mensah B, Sidibe O (2004) Knowledge, attitudes, and practices related to maternal health in Bla, Mali: Results of a baseline survey. Partners for Health Reform Plus, Bethesda

Valdivia M (2002) Public health infrastructure and equity in the utilization of outpatient healthcare services in Peru. Health Policy Plan 17(Suppl):12–19

van den Broek NR, White SA, Ntonya C, Ngwale M, Cullinan TR, Molyneux ME et al (2003) Reproductive health in rural Malawi: a population-based survey. British J Gynaecol 110(10):902–908

Willis CY, Leighton C (1995) Protecting the poor under cost recovery: the role of means testing. Health Policy Plann 10:241–256

World Bank (1999) Health care in Mali: Building on community involvement, Précis No. 188. World Bank Operations Evaluation Department, Washington