

AN ASSESSMENT OF INFERTILITY IN A RURAL AREA

Roy Ann Sherrod, DSN, RN¹

¹Professor, [Capstone College of Nursing](#), University of Alabama, rsherrod@bama.ua.edu

Keywords: Infertility, Rural, Urban, Survey

ABSTRACT

Objective: The incidence of infertility is increasing steadily and is not restricted to any geographic area. An assessment of infertility in rural areas was made to determine if there was a difference in infertility rates and related factors between urban and rural groups.

Design: Survey research methodologies were used.

Setting: Phone interviews were conducted to collect data in the homes of subjects who were 18 years or older.

Results: Descriptive statistics were used to analyze data. There was a statistically significant difference in the number of urban and rural subjects who were infertile ($p=.05$) in this sample. Rural infertile subjects were less satisfied with their health care provider if they sought treatment for infertility. Additionally, the sample of total rural citizens had to travel longer to their health care provider.

Conclusion: There are differences related to infertility for rural and urban groups. Implications for health care providers and policy makers include providing enhanced reproductive services to rural citizens.

CALL OUTS

1. More than 10-15% of childbearing age couples experience infertility and there is a need to know if the problems associated with it are similar across geographic areas.
2. There is a critical need to understand the impact of rurality on infertility so that strategies to provide appropriate care can be implemented.
3. Nurses and other healthcare providers need to address the differences in the infertility experience for rural citizens through political and professional activism.

INTRODUCTION

The word infertility brings to mind many negative connotations: barren, sterile, and unfulfilled. Primary infertility has been defined as the inability to conceive after one year of consecutive unprotected intercourse or the inability to carry a pregnancy to live birth (Menning, 1980; Schoener & Krysa, 1996; Sherrod, 1995). Secondary infertility occurs when couples have achieved a live birth and are unable to do so again (Wiczuk, 2000). Couples facing infertility who wish to have children may feel unfulfilled, empty, and deprived of what seems to be a natural progression of life events. Couples and individuals facing infertility may have to cope with a possible unanticipated life crisis that results in several losses. These losses can include the experience of pregnancy and parenting a biologic child, a positive sense of self, control of one's life and goals and privacy of one's body and sexual activity (Clapp, 1982; Edelman & Connolly, 1986; Imeson & McMurray, 1996).

Approximately 10-15%, or one in six couples of childbearing age must deal with infertility and the number is increasing (Hwang, 1999; Perry, 1999; Tucker, 1997). Couples dealing with the emotional and biologic dimensions of infertility may experience a series of reactions in adjusting to the discrepancy between the reality of their present and the ideal. Their lives may feel out of control (Barber, 2000; Tucker, 1997). Feelings of decreased self worth, disequilibrium, and anxiety may occur (Keye, 1984; Laborde, 2000; Menning, 1980; Sandelowski, 1993). The couple may experience a typical grief response, surprise, denial, isolation, anger, guilt, and sadness and may come to a point of resolution (Menning, 1980; Sherrod, 1995; Tucker, 1997). Biologic factors in infertility are varied and complex. Problems for the female can be structural such as no ovaries or blocked fallopian tubes or functional such as not ovulating. For the male, there could be problems of too few sperm or impaired motility of sperm or structural problems such as varicose veins in the scrotum. He also may be affected by excessive use of alcohol, marijuana, or tobacco. For both males and females, the biological consequence of stress can negatively impact reproductive efforts (Kelly, 2001; Robinson & Stewart, 1995; Trantham, 1996). The diagnostic work up can be invasive and the treatment options painful, expensive and frightening.

The access to reproductive health care specifically for infertility can be very limited in rural areas (Bushy, 2000; National Rural Health Association [NRHA], 1999). The mostly primary care physicians in rural areas are more likely to be without the knowledge and skills to assist the couple (Morgan, 2001; Ricketts, 1999). This problem is compounded by the fact that even primary care providers are scarcer in rural areas (The Center for Health Professions, 2001). Additionally, the time required to cover the distance to access any health care services in rural areas may be great and getting there may be stressful (Bushy, 2000). The stress of trying to access services is particularly significant for the infertile couple because they are already dealing with a host of other emotional issues and stresses (Imeson & McMurray, 1996; Schoener, 1996). The expense of travel and infertility services can be quite daunting for those who live in rural areas, in light of the fact that there already exists a great deal of poverty and greater incidences of individuals without insurance to assist with some of the cost (NRHA, 1999; Ricketts, 1999). There are also limited services available to support the couple once they enter into the "world" of infertility. There are support groups such as the one sponsored by the National Infertility Association, RESOLVE (2002). However, most support groups such as RESOLVE are only available in urban areas. Although one might argue that there are other priorities in terms of the health care needs of rural citizens, should not the desires of those individuals be considered? Are people less likely to be concerned about procreation because they live in a rural area? It is the assumption of the researcher that this is not the case and health care providers should be challenged to provide services for infertility in rural areas.

The change in the United States population from a major rural to predominantly urban one is quite significant, particularly when one considers that the population growth in rural areas is very dependent on "natural" measures or births minus deaths for increase. This natural growth is negatively impacted when people of childbearing age move to urban areas for job and other opportunities (Bushy, 2000). Most recently, there has been a relatively small in-migration in rural areas of childbearing age individuals who may positively impact the population growth by starting and continuing family building

(Bushy, 2000; Ricketts, 1999). Given the critical economic impact of rural areas where people are needed to produce agricultural and other related products for the rest of the United States and world, it is essential that there is a sufficient population available to meet this need. If childbearing age rural residents have difficulty contributing to the production of this population, then there may be no children to raise and be encouraged to stay. Thus, the question remains is there a problem with infertility and infertility services for those in rural areas and is it different than those in urban areas?

PURPOSE

The purpose of this study was to explore the difference with regard to selected criteria in the infertility experience for rural and urban individuals in a southern state. For the purposes of this study, rural was defined as all counties in the state other than those 16 in this study in a Metropolitan Statistical Area (MSA) that were considered urban. MSA is defined as one or more counties having one city with 50,000 or more population or an urbanized area (as defined by the U.S. Bureau of Census) with at least 50,000 in population and a total of at least 100,000 in the counties comprising the MSA. Counties included in MSA are considered urban. Counties not in the MSA are considered rural. Each MSA must include the county in which the central city is located and additional contiguous or fringe counties if they are economically and socially integrated with the central county. Using this definition, Alabama has 45 (67%) rural and 22 (33%) urban counties (Alabama Rural Health Association, 2002).

METHODOLOGY

A survey design was used to assess infertility using the Capstone Poll. The Capstone Poll is based on a random survey of adult respondents, 18 years or older in Alabama. A computer using all of the three digit telephone exchanges in the state drew the random sample of households. Households were contacted using these numbers. A respondent in the household was randomly selected by asking for the adult who had the most recent birthday. Trained, experienced personnel employed by the Capstone Poll conducted interviews.

Data were analyzed using descriptive statistics. Percentages were calculated to provide summative data regarding rural and urban subjects. Chi squares were used to look at comparisons of rural and urban subjects regarding selected demographics and factors related to the infertility experience.

FINDINGS

A total of 450 subjects comprised the sample. Of these, 65.6% were classified as urban and 34.4% were classified as rural based on the definitions used for this study. This composition is somewhat comparable to the approximate 75% urban and 25% rural distribution of the general population of the United States as noted by Bushy (2000). There were no statistically significant differences in the selected demographics of marital status, age, education, and income for the total sample based on rurality or urbanicity. With the exception of educational level, the same was true for those in the subsample

who reported problems with infertility. Urban infertile persons were better educated than rural persons.

The majority of subjects from the total sample of 450 were married (67.5%). This rate compares to 68.4% of total urban and 65.8% of total rural subjects who were married. With the sample of subjects who experienced problems with infertility, 65.7% of infertile urban and 55.5% of infertile rural respondents were married. Given that the prime age range for fertility is between 18-44 years (Laborde, 2000), there was slightly greater than half (54.2%) the subjects in the total sample who were in this age range, 53.2% of total urban and 56.1% of total rural were also in this age range. The sample of infertile individuals included 62.8% of infertile urban and 44.4% of infertile rural in this age range. More than two thirds (89.7%) of the subjects in the total sample had a high school education or beyond. Of these, 89.1% of the total urban and 90.9% of the total rural had a high school education or more. A similar distribution was noted for the infertile sample with 94.2% of infertile urban and 88.8% of infertile rural. However, urban/rural was not statistically significantly different for the total group. Although there was no statistically significant difference in reported income for the total sample with 43.5% reporting an income below \$40,000, only 40.6% of total urban subjects who responded had an income below \$40,000 compared to 49.0 % of total rural respondents. A similar comparison existed for the infertile urban (48.5%) and infertile rural (55.5%) sample (see Table 1).

Table 1
Selected Demographics

Demo- graphics	Total Urban	Total Rural	Infertile Urban	Infertile Rural	Total Sample	Infertile Sample	<i>P</i> Value Total Sample	<i>P</i> Value Infertile Sample
	N=295 <65.6%>	N=155 <34.4%>	N=35	N=9	N=450	N=44		
Marital Status (Married)	(68.4%) N=202	(65.8%) N=102	[65.7%] N=23	[55.5%] N=5	<67.5%> N=304	63.6% N=28	.88	.36
Age (18-44)	(53.2%) N=157	(56.1%) N=87	[62.8%] N=22	[44.4%] N=4	<54.2%> N=244	59.0% N=26	.31	.32
Education (≥ High School)	(89.1%) N=263	(90.9%) N=141	[94.2%] N=33	[88.8%] N=8	<89.7%> N=404	91.1% N= 41	.33	*.03
Income (≤ 40,000)	(40.6%) N=120	(49.0%) N=76	[48.5%] N=17	[55.5%] N=5	<43.5%> N=196	50.0% N=22	.24	.87

Significantly Different ($p \leq .05$) using Chi Square

Approaching Significance ($p \leq .1$) using Chi Square

() Indicates proportion of total urban or total rural sample

[] Indicates proportion infertile urban or infertile rural sample

<> Indicates proportion from total sample

Indicates proportion from infertile sample

P value is difference in total sample or infertile sample

Approximately 10% of subjects reported a problem with infertility. This percentage is comparable to the prevalence reported in the literature (Hwang, 1999; Tucker, 1997). Results indicated that there were some statistically significant differences in the infertility experience for urban and rural citizens in this sample. Urban citizens were more likely to experience infertility ($p = .05$). Of those who reported a problem with infertility, 79.5% were from urban areas and 20.5% were from rural areas. There was no statistically significant difference in who was likely to seek assistance for infertility. However, a greater percentage of urbanites did report that their coverage met their needs better in the infertile sample as indicated by a greater satisfaction with their health care (see Table 2).

Table 2
Problems with Infertility

Infertility <N=44 or 9.8% of total sample>	Urban	Rural	<i>P</i> Value
Experienced problems with Infertility	79.5% N=35	20.5% N=9	*.05
Sought Treatment for Infertility	[71.4%] N=25	[88.9%] N=8	.54
Satisfaction (Rated 8 or above on 1-10 scale)	{76.0%} N=19	{50%} N=4	.16
Health Coverage	[82.9%] N=29	[100%] N=9	.18

* Significantly Different ($p \leq .05$) using Chi Square
P value is difference in total sample or infertile sample

With regard to social factors associated with infertility, there were no statistically significant differences in alcohol consumption, cigarette smoking or stress experience in the total sample or the infertile sample based on urban and rural classifications. In the total sample, those in urban areas tended to smoke more, but not significantly more ($p = .20$). Those in urban areas considered themselves to be more stressed, but not at a level of significance (see Table 3).

Results indicated a statistically significant difference for some health related social factors for the total urban and total rural sample. Although not indicated in the table, those living in urban areas rated their health significantly different from those in rural areas ($p = .02$) when looking at the total range of options from one to ten with one being poor and ten being excellent. However, when looking at specific indicators for a good health rating (eight or above) there was no statistically significant difference ($p = .26$). The same was true for health perception in the infertile sample ($p = .18$). There were no significant urban or rural differences in which group was likely to have a regular health care provider. In both the total sample and the infertile sample, there were marginally less rural citizens who had private health insurance but not significantly so.

Although not indicated in Table 3, there were statistically significant differences ($p = .01$) in the time to travel to the doctor for urban and rural subjects in the total sample. Rural

Table 3
Social Factors

Social	Total	Total	Infertile	Infertile	<i>P Value</i>	<i>P Value</i>
	Urban N=295	Rural N=155	Urban N=35	Rural N=9	Total Sample N=450	Infertile Sample N=44
Alcohol (two or more/day)	(42.0%) N=124	(34.2%) N=53	[45.7%] N=16	[17.1%] N=6	.27	.50
Cigarette Smoking	(26.8%) N=79	(21.3%) N=33	[42.9%] N=15	[55.6%] N=5	.20	.50
Stress Experience (≤ 4 with 1 being high on 1-10 scale)	(33.6%) N=99	(36.1%) N=56	[40.0%] N=14	[33.3%] N=3	.76	.71
Perception of Health (≥ 8 with 1 being poor on a 1-10 scale)	(68.5%) N=202	(63.2%) N=98	[68.1%] N=24	(44.4%) N=4	.26	.18
Regular Health Care Provider	(92.5%) N=273	(90.3%) N=140	[94.3%] N=33	[88.7%] N=8	.42	.57
Health Care Coverage	(81.7%) N=241	(76.1%) N=118	[82.9%] N=29	[100%] N=9	.16	.18
Length of Time to Reach Doctor (≥ 30 min)	(21.4%) N=63	(30.3%) N=47	[22.9%] N=8	[33.3%] N=3	# .08	.52

Significantly Different ($p \leq .05$) using Chi Square

Approaching Significance ($p \leq .1$) using Chi Square

() Indicates proportion of total urban or total rural sample

[] Indicates proportion infertile urban or infertile rural sample

<> Indicates proportion from total sample

P value is difference in total sample or infertile sample

citizens had to travel for longer periods to seek health care. Table Three does indicate that when looking further at a comparison of 30 minutes or more, there was no statistically significant difference in either the total urban or rural, nor the infertile rural or urban sample.

DISCUSSION

The findings of this study have significance for those who are instrumental in providing health care for rural individuals during their reproductive years. Some of the generally accepted ideas about rural citizens and their health care are inconsistent with the findings in this sample and warrant reconsideration. In this sample, they were not statistically significantly poorer or less likely to have a health care provider. Those rural subjects in the infertile sample, however, were less educated. On the other hand, issues related to quality of care were consistent with dominant perceptions for rural health care.

Urbanites in the infertile sample reporting that their coverage met their needs better, as indicated by satisfaction when seeking assistance for infertility, is significant in that the “quality” of health services has long been noted to be less in rural areas and may be particularly so for reproductive/infertility health services. This finding supports the position by the NRHA (Morgan, 2001) that noted that the quality of health services, in general, are of a lesser quality in rural areas.

Urban subjects experiencing statistically significantly more infertility is not consistent with the fact that they did not smoke more nor have more stress. These two factors, along with alcohol consumption and others, have been associated with increased infertility as noted by Robinson and Stewart (1995) and Trantham (1996). There were no differences in the alcohol consumption in rural and urban subjects in the total sample or infertile sample. This finding is congruent with data reported by Ricketts (1999) in which no notable difference was seen in reported alcohol use in urban and rural adults. The author did, however, caution against the validity of this interpretation given that data were obtained by self-report. He further noted that the presence or absence of rural-urban differences with regard to alcohol use could be attributable to other factors such as socioeconomic status, ethnicity and population density and proximity to urban areas.

Having health insurance is an important factor for general health. However, because insurance companies cover very few infertility costs, this factor may be less of an issue when considering differences in resources for infertile rural and urban citizens. The income of those who are infertile is significant, although not statistically so, since the additional cost for treatment not covered by insurance must come from out of pocket. If one has very little money to begin with, seeking assistance for infertility becomes more challenging when decisions must be made about how to spend the limited funds one may have. Findings in this study indicated that this dilemma was not as relevant a factor for this sample.

Based on data analysis, it is clear that there is a difference in the access to services available to infertile persons in rural areas. Rural citizens having to travel farther for health care was supported by results in this sample and is significant in that it adds to the stresses already inherent in the infertility experience as noted by Barber (2000). Having to travel longer because of greater distances can also significantly increase the expense of infertility treatment for rural citizens.

RECOMMENDATIONS

As a result of this study, several recommendations come to mind for health care, education, and research. There has long been ample evidence that the availability and

access to health care in the rural areas needs to improve (Bushy, 2000; Morgan, 2001; Ricketts, 1999). Although the findings in this sample supported a difference in the prevalence of infertility in rural areas and urban areas, there is still a need for these services in rural areas. Because the need is there, it would be astute of policy makers, nurses and other providers of health care to consider how to increase the quality and access of reproductive services when it can be accomplished in a cost effective manner in conjunction with other services. For example, when looking at continuing education offerings and resources for nurse and primary care providers in rural areas, reproductive health issues related to initial infertility work ups such as basal body temperature measures and sperm counts could be included. Also, when securing specialists who serve in rural areas for women and men's health, some additional effort could be made to secure those who have reproductive experience. Although it might eventually be necessary for rural residents to travel for infertility services, being able to take care of those initial service needs locally would save on gas, time, frustration and perhaps money. The costs savings would be even greater if they did not need to take off work to travel to the appointment.

Those who educate nurses and other healthcare providers who work with rural populations must make them aware of the special needs of these citizens. They must also make students aware of how to provide the most cost efficient and effective reproductive services available to those who live in rural areas. For example, teaching patients about some basic infertility care such as diet, alcohol consumption, clothing, stress and similar measures could provide them with some relatively inexpensive measures to address their infertility.

Additional research is needed to get a better understanding of the impact of infertility for those who live in rural areas. An additional study with a larger sample could provide greater statistical power to data analysis and detect significant differences better. Although policy makers and those who allocate resources may be more impressed by quantitative data, qualitative studies will lend the fullest understanding of this phenomenon of infertility and rurality. Studies, which look at the needs and perspective of infertile rural residents from their lived experiences, can assist health care providers to better meet their needs.

REFERENCES

- Alabama Rural Health Association (2002, June 17). *What is rural?* Retrieved June 17, 2002, from <http://www.arhaonline.org/what-is-rural.htm>
- Barber, D. (2000). A fertile field. *Nursing Standard*, 14(26), 77-78. [MEDLINE]
- Bushy, A. (2000). *Orientation to Nursing in the Rural Community*. Thousand Oaks, CA: Sage.
- Clapp, D. (1985). Emotional responses to infertility: Nursing interventions. *Journal of Obstetric, and Neonatal Nursing*, 14(6suppl.), 325-355. [MEDLINE]
- Edelmann, R.J., & Connolly, K.J. (1986). Psychological aspects of infertility. *British Journal of Medical Psychology*, 59, 209-219. [MEDLINE]
- Hwang, M.Y. (1999). Infertility options. *Journal of the American Medical Association*, 282(19), 1888-1889.

- Imeson, M., & McMurray, A. (1996). Couple's experiences of infertility: A phenomenological study. *Journal of Advanced Nursing*, 24, 1014-1022. [MEDLINE]
- Kelly, A.L. (2001). Does stress hurt fertility? *Joe Weider's Shape*, 20(5), 40-44.
- Keye, W.R. (1984). Psychosexual responses to infertility. *Clinical Obstetrics and Gynecology*, 27, 760-766. [MEDLINE]
- Laborde, K.L. (2000). Infertility myths and medicine: Getting to the bottom of the baby chase. *New Orleans Magazine*, 34, 30-31.
- Menning, B. (1980). The emotional needs of infertile couples. *Fertility and Sterility*, 34, 313-319. [MEDLINE]
- Morgan, A. (2001, September 10). *HHS Report Finds Rural Community Health Lacking: NRHA Cites Report As A National Call to Action*. Message posted to National Rural Health Association mailing list.
- National Rural Health Association. (1999, May). *Access to health care for the uninsured in rural and frontier America*. Retrieved May 17, 2002, from <http://www.nrharural.org/dc/issue.papers/ipaper15>
- RESOLVE: National Infertility Association [Website]. Retrieved May 17, 2002, from <http://www.resolve.org/>
- Perry, K. (1999). Infertility: Fertile ground for managed care. *Managed Health Care*, 9(5), 2-25.
- Ricketts, T.C. III. (Ed.) (1999). *Rural Health in the United States*. New York: Oxford University Press.
- Robinson, G.E., & Stewart, D.E. (1995). Infertility and new reproductive technologies. *American Psychiatric Press Review of Psychiatry*, 14, 283-306.
- Sandelowski, M. (1993). *With child in mind: Studies of personal encounters with infertility*. Philadelphia: University of Pennsylvania Press.
- Schoener, C.J., & Krysa, W. (1996). The comfort and discomfort of infertility. *Journal of Obstetric, Gynecologic and Neonatal Nursing*, 25(2), 167 - 172. [MEDLINE]
- Sherrod, R.A. (1995). A male perspective on infertility. *MCN*, 20(5), 269-275.
- The Center for Health Professions. (2001, May 21), University of California, San Francisco.
- Trantham, P. (1996). The infertile couple. *American Family Physician*, 54, 1001-1010. [MEDLINE]
- Tucker, J. (1997). Problems of infertility. *Practice Nurse*, 13(8), 450, 452, 454-5.
- Wiczynk, H. (2000). Infertility: A modern work-up. *Female Patient*, 25(8), 72-77.