Access to Biofeedback Therapy for Women Suffering from Headache in Rural Wyoming

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Abstract

Biofeedback is an effective treatment for chronic headaches but is poorly utilized by those living in rural areas. An exploratory qualitative study was conducted to determine the barriers and benefits to seeking biofeedback therapy for women experiencing chronic headache pain while living in rural areas. In-depth individual interviews were employed. Barriers identified were numerous. Seven barriers identified were travel, time, lack of knowledge, skepticism, lack of referral by health care provider, difficulty relaxing, and pharmacologic therapy was already working. The two benefits identified were that biofeedback perceived as a natural therapy and is good for relaxation. Health care providers need to work toward eliminating barriers to biofeedback for rural women since it is a treatment of choice for migraine and tension type headaches.

Keywords: rural, women, biofeedback

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Headache is an exceedingly common complaint that was accurately described as early as 3,000 B.C. Today, an estimated 45 million Americans suffer from chronic, recurring headaches and an estimated 50 billion dollars each year are lost by industry because of absenteeism and medical expenses related to headache (National Headache Foundation, 2000). Of those suffering from headache, 70% are women. Treatment is often complex and is met with varying degrees of success. For example, a meta-analysis of 78 articles with a total of 2,866 participants revealed that pharmacological therapy was comparable to placebo therapy for recurrent tension headache (Bogaards & ter Kuile, 1994). Ideally, the avoidance of significant pharmacological therapies (because of various possible side effects and questionable efficacy) and the implementation of stress reduction programs, such as biofeedback or dynamic psychotherapy, are preferred for the migraine or tension headache sufferer (Gallagher, 1991). However, the dearth of health care professionals available to provide biofeedback therapy in rural areas poses a barrier. Little or no research exploring the use of complementary therapies in rural areas is evident in the literature. Because biofeedback therapy is considered a primary modality for treatment of tension and migraine headaches (Barrett, E., 1996; Bussone, Grazzi, D'Amico, Leone, & Andrasik, 1998; Green, 1993; Holden, Deichmann , & Levy ,1999), identifying issues that would either promote or prevent the rural citizen from obtaining this therapy is important.

Purpose

The purpose of this study was to identify the benefits and barriers to seeking biofeedback therapy for women experiencing chronic headaches while living in rural areas.

Review of Literature

Biofeedback is a non-pharmacological, non-invasive treatment in which individuals learn neuro-musculoskeletal self-regulation. Biofeedback therapies emerged in the 1970s when advances in psychological and medical research converged with developments in biomedical technology (Goleman & Gurin, 1993). Biofeedback has been successfully used in the treatment of migraine and tension type headaches, fecal and urinary incontinence, epilepsy, irritable bowel syndrome, asthma, stroke, hypertension, chronic pain, muscle spasms, pain associated with Raynaud's disease, and other vascular or muscular disorders (Green, 1993; Schwartz, 1995; Shellenberger, Amar, Schneider, & Turner, 1989). Efficacy criteria for clinical biofeedback and the use of biofeedback for headache will be described in this article. Characteristics of obtaining rural health care will also be discussed.

Biofeedback Therapy

Biofeedback therapy is a non-pharmacological approach in which clients learn self-regulation. Through the use of monitoring instruments that detect and amplify physiological information, clients are trained to perceive and alter parasympathetic responses that are often related to pain and disease (Stern & Ray, 1977). After becoming aware of heart rate, blood pressure, skin temperature, muscle tension, and other involuntary body functions, conscious mental effort is used to control these functions. Multiple component behavioral medicine treatment packages that include biofeedback therapy can lead to reductions in medication use (Kabela, Blanchard, & Applebaum, 1989; O'Grady, 1987; Young, Bradley, & Turner, 1995), as well as reduced physician visits, medical costs (to patients and to insurers), and (d) hospital stays (Shellenberger et al. 1989; Wauquier, McGrady, Louise, Klassner, & Collins, 1995). When biofeedback information is used to make changes that can help reduce or stop symptoms,

feelings of helplessness are replaced with knowledge and the feeling that self-regulation is possible (Goleman & Gurin, 1993).

Efficiency Criteria for Clinical Biofeedback

Biofeedback therapy is considered an appropriate for treatment of a disorder if it is clinically efficacious and low in risk (Shellenberger et al. 1989). The following diagnoses have met efficacy criteria for treatment with biofeedback therapy: anxiety disorders, asthma, Attention Deficit and Hyperactivity Disorder, Cerebral Palsy, disorders of the intestine motility (irritable bowel syndrome, rectal pain, rectal ulcer), enuresis, epilepsy, essential hypertension, migraine and tension headaches, fecal and urinary incontinence, insomnia, motion sickness, myofascial pain, temporomandibular joint (TMJ) pain, and mandibular dysfunction, neuromuscular disorders, chronic and rheumatoid arthritis pain, Raynaud's Disease, and stroke (Shellenberger et al. 1989). Biofeedback therapy is the treatment of choice for Raynaud's disease/syndrome, certain types of fecal incontinence and urinary incontinence, while it is a treatment of choice for tension-type headaches, migraine headaches, irritable bowel or spastic colon syndrome, essential hypertension, asthma, and a variety of neuromuscular disorders (Shellenberger et al. 1989).

Headache and Biofeedback

Headache frequency, intensity, duration and analgesic intake decrease when biofeedback is used as a form of treatment (Wauquier, McGrady, Louise, Klassner, & Collins, 1995; Goleman & Gurin, 1993). These factors should lead to a reduction in medical utilization and medication usage. Among patients with chronic headaches who received biofeedback therapy, they had 75% fewer physician office visits for headache, used 56% less medication and had 19% fewer emergency room visits than their counterparts (O'Grady, 1987). It is noteworthy that for these clients, office visits for headache remained consistently low five years after treatment.

Pharmacological treatment has been the norm for benign geriatric headache with potential for multiple problems such as side effects, metabolic, absorption and excretion rate abnormalities, and the use of multiple medications (Kabela et al. 1989). Thus, the use of non-drug alternatives, such as biofeedback, in the treatment of the geriatric headache is a desirable goal. Arena, Hightower, and Chong (1988) treated ten geriatric tension headache patients (aged 62-80) with eight weeks of progressive muscle relaxation using biofeedback. Post-treatment assessment at three months revealed significant decreases in overall headache activity (50% or greater).

Kabela et al. (1989) studied 18 headache patients aged 60 years and older who received either thermal biofeedback (TBF) or electromyographic (EMG) biofeedback. There was a significant overall group improvement in medication intake over a 28-day interval. The reduction in medication intake from 63% to 50% is especially encouraging given the greater likelihood of multiple medication use, and ensuing complications, in this population. Moreover, of those patients who initially consumed headache medication, five patients essentially eliminated all medication. The efficacy of non-drug treatment for geriatric headache clearly warrants further study (Kabela et al. 1989).

Published research strongly supports the effectiveness of biofeedback therapy as a non-pharmacological treatment of headaches. People living in rural areas could benefit from this type of therapy.

Rural Characteristics

According to the 1990 census approximately 61.7 million people live in rural areas (Wyoming State Government, 1998). Rural areas are defined as places having less than 2,500 residents and open territory. In 1993, the Office of Management and Budget (1993) developed

the rural-urban continuum code as a classification scheme to describe counties by degree of urbanization and nearness to a metropolitan area. Metro counties have 4 classifications that range from 250,000 to over a million population. Nonmetro counties have 6 classifications that include urban populations of 20,000 or more that are adjacent to a metro area to completely rural areas with fewer than 2,500 population that are not adjacent to a metro area. Being adjacent to a metro area is an advantage when rural residents seek health care because the distances to the services of a health care provider are less.

Wyoming is predominately a rural state with only 2 counties classified as metro areas with populations between 20,000 and 250,000. The remaining counties are classified as nonmetro counties not adjacent to a metro area. In addition, twenty-one of twenty-three counties in Wyoming were designated as health professional shortage areas in 1998 (Wyoming Department of Health, 1999). This shortage means that basic health care needs are not adequately met and specialty care is almost non-existent. Traveling from home to obtain health care can present serious difficulties (accommodation, food and transport costs) that might prevent or delay the trip (Veitch, Sheehan, Holmes, Doolan, & Wallace, 1995).

In the rural United States, the spirit of individual responsibility remains strong. Primary to the rural resident's perspective on health care is a fundamental belief in the individual responsibility for self-care (Horner, Ambrogne, Coleman, Hanson, Hodnicki, Lopez, 1994). Biofeedback can be a form of self-care. Persons are trained to control bodily responses to various physical or psychological problems. For biofeedback therapy to be successful, a trained therapist (Shellenberger et al. 1989) must supervise the therapy. Nurses, nurse practitioners, clinical psychologists, and other allied medical professionals can be trained to provide biofeedback therapy by obtaining special training and education in addition to their current

degree. According to the Biofeedback Society of America, only 2 certified biofeedback therapists practice in the state of Wyoming (Association for Applied Psychophysiology and Biofeedback, 2000).

Method and Design

An exploratory qualitative study was conducted to examine perceptions about biofeedback therapy from women suffering with chronic headaches in a rural area. Individual in-depth interviews of nine women were conducted. Exploration and examination of the descriptive responses allowed the data to be interpreted contextually and reported narratively.

Human Subjects

The research proposal and consent form were approved by the University of Wyoming Institutional Review Board. After potential participants were given an overview of the study, informed consent was obtained.

Setting and Sample

Purposive sampling was used to select participants from two rural counties in Wyoming: Platte County and Carbon County. Platte County covers an area of 2,108 square miles and has a population of 8,425. The county is comprised of mainly farming and ranching communities. Carbon County covers 7,956 square miles and has a population of 15,855. This county consists of mainly farming and ranching communities.

To be eligible for the study, participants must have been living in a rural setting, and experiencing 1) chronic tension-type headache, 2) chronic migraine headache, or 3) chronic headache of mixed type for at least six months. Both women who had received biofeedback and those who had not were included in the study. This strategy permitted a broad exploration of the experience that women have in rural areas related to biofeedback in relationship to a diagnosis of

headache. Seven participants were obtained by referral through the Laramie Peak Medical Clinic located in Platte County. Two Carbon County participants were referred to the researcher by a biofeedback therapist practicing in Laramie, Wyoming. All potential participants were given information about the study and expressed consent to be contacted by the researcher.

Procedure

Each participant was contacted at least twice. Initial contact was made by telephone to introduce the researcher, further describe the study, and reaffirm the participant's willingness to participate. Upon agreement to participate, a date and time was agreed upon for the interview. Prior to the interview, a consent form, a demographic data sheet and a copy of the interview questions were presented to each participant. Once the consent form was signed and reviewed, the interview began and lasted 1 to 2 hours.

Semi-structured interviewing was the data collection method utilized for this study. The interview was conducted in the participant's home or other convenient location if the participant desired and was audiotaped. A series of approximately seven open-ended questions were presented to each participant in order to obtain thorough and complete responses. The questions directed each participant to describe her headaches, her perceptions of biofeedback, and how she benefited or did not benefit from biofeedback. Each participant was encouraged to discuss freely any opinions, thoughts, and/or ideas related to the topic. The audiotapes were then transcribed onto a computer disk verbatim. Field notes were kept for each interview to avoid loss of valuable information and to increase the understanding of the interview.

Limitations

Interviewing may have been a limitation in this study. Participants may have felt uncomfortable with the taped interview and therefore may have been apprehensive in stating or

explaining everything that they experienced. However, the participants, appeared quite comfortable and at ease.

Successful biofeedback therapy is due, in part, to having a trained biofeedback therapist (Schwartz, 1995; Shellenberger et al. 1989). The qualifications of the therapists who provided biofeedback to two of the four participants were unknown. Two participants received biofeedback from an advanced practice nurse who had training in biofeedback therapy but was not certified.

Data Analysis

Once gathered and transcribed, data were analyzed to elucidate underlying patterns and relationships. "In analyzing the data, verbatim statements, thoughts, actions, and observations are critically examined to identify patterns, themes, categories or exemplars" (Talbot, 1995). Common themes were identified and categorized as either a benefit or a barrier to receiving biofeedback therapy. The information was coded, evaluated and grouped into categories. Constant comparative analysis continued until similarities and differences in the data emerged. These similarities and differences were then grouped together and analyzed until common themes were identified. The themes identified are not mutually exclusive and tended to overlap each other to some degree.

To increase the credibility of the study, member checking was utilized. This process involved checking with or getting feedback from some of the participants to ensure that the researcher had captured their words and meanings by "playing back" to them the interpretations of the data (Talbot, 1995). Agreement by two of the participants in the study validated the researcher's interpretation of the transcribed data. In addition, two faculty members familiar with nursing research reviewed the transcriptions and examined the categories and themes.

Results

Of the nine women interviewed, four had previously tried biofeedback therapy for their headache management and five participants had not. Whether or not they actually participated in biofeedback therapy, all would have traveled 60 to 100 miles for this type of therapy because it is not offered in the communities where they lived. The mean age of the participants was 43 years, with a range from 29 to 56 years.

All the women experienced severe headaches. When they were asked to rank their headache pain on a scale of 0-10 (zero being no pain and 10 being the worst pain they had ever felt), most ranked their headache pain as at least a "7." Overall, the participants stated they would do anything to get rid of the pain. Medications were used to decrease the headache pain before it reached excruciating levels.

Central Themes

The two general categories for grouping the responses related to biofeedback therapy were identified as either barriers or benefits. Each category contained common themes that emerged from participant interviews.

Barriers

According to these nine women, more barriers to receiving biofeedback were identified than were benefits. Seven common themes emerged which were labeled as barriers to receiving biofeedback: 1) travel, 2) lack of knowledge, 3) skepticism, 4) lack of referral by health care provider, 5) time, 6) couldn't relax, and 7) pharmacologic therapy was already working.

Travel was a common complaint of eight participants. Jill (All names used in reporting the data are pseudonyms.) described it in this way:

> The hundred miles is one big barrier to go that far for an hour session…but going a hundred a fifty miles and your meals and gas … plus the expense of the treatment and then wondering whether it was gonna do anything…

Lucy had a similar opinion:

> I had to drive thirty-two miles one way, so it's sixty-four miles just to do this. To me if I can take medication and go to bed, I'd rather do that than get in the car and drive sixty miles to do this.

Sally continues to drive one hundred miles to obtain biofeedback therapy because she feels she has greatly benefited from it. Though she, too, feels that travel is a barrier:

> It's not like going twenty miles, it's like going a hundred miles…so I think travel is a barrier, especially in the winter, travel in the winter is bad here.

All nine participants had a lack of knowledge about biofeedback. Of the four participants who had tried biofeedback previously, all went into it without really knowing what to expect. Of the five participants who had not tried biofeedback, four had heard of the word biofeedback, but could not explain or define exactly what it was. One participant had never heard of biofeedback and had no idea of what it was about. Diane expressed what kept her from trying biofeedback:

> I guess just not knowing anything about it…… (not) having it presented as a viable option. Basically ignorance, I guess. It's just not knowing, anything about it, (not knowing) enough about it to pursue it.

Sally, who continued to use biofeedback, had another viewpoint:

> I feel like when I tell someone about biofeedback, they don't even know what I'm talking about. I don't think it's advertised enough, like well, maybe in the papers or something. I never heard of it until the doctor told me.

Mary, when asked why she had never tried biofeedback, had a simple answer that validated her lack of knowledge about biofeedback:

> Because I don't know what it is, nobody's ever mentioned it to me before. Without knowing and without reading, I would have to guess that maybe biofeedback is figuring out when you get your headaches and maybe avoiding that.

Eight out of nine participants were skeptical of biofeedback, including the four participants who had tried it. Christy expressed it in this way:

> I don't know of anybody who's cured their headaches by biofeedback. If I had somebody who could tell me, you know, with a testimonial or whatever, and they got rid of it… I would like to visit with somebody who had had it.

Amy commented that she would like to try biofeedback at this point in her life, but had reservations:

> There's a safety net because if it doesn't work, I know there's something else that would work that I could fall back on. I needed more assurance that I wasn't gonna go put all that investment into it (biofeedback) and not have it work.

Jill had tried biofeedback in the past; however, she had an interesting comment that implied she, too, was skeptical of biofeedback:

> It was a good experience. Mainly it taught me how to relax, and that was a benefit for me. However, I wasn't convinced that if I did the relaxing that it was going to take the headache away.

The four participants who tried biofeedback therapy had learned of biofeedback from their regular health care provider. The five participants who had not tried biofeedback had not been given biofeedback as an option for headache management by their regular health care provider. For example, Marsha's, recommendation to try biofeedback therapy came from a member at the headache clinic in Denver, Colorado, but not by her regular health care provider. She declined to pursue biofeedback due to the travel and time involved. Diane mentioned that she had never been given the option for biofeedback therapy. She would have tried it if it had been an option offered to her by her health care provider. She felt that rural health care providers are not knowledgeable about biofeedback therapy and therefore do not think to refer their patients for it.

Participants also felt that biofeedback therapy would take too much time. Mary puts it succinctly:

> I think that it would take a lot of time, and time is something that is really precious to me. So at this point in time I think if it's easier to take medications for my headache, I think I'm probably more willing to do that than I am to take the time. You know, if it means, you know, travel to Cheyenne or Laramie, or Casper… you know, which is exactly why I haven't gone to a neurologist.

Not being able to relax meant different things to each participant who had tried biofeedback. Two of the four participants who had tried biofeedback stated they could not relax enough. Donna stated she could not relax because she and the therapist were too focused on the machines. When she tried relaxing without the machines, she could relax. Lucy couldn't relax because she stated she wasn't comfortable with the therapist. Lucy also described another reason that kept her from relaxing:

> Sitting in that office, I would reach a certain level where I could relax, and then I'd start thinking about how I'm supposed to be relaxing, and then it'd tense me up. And I just could never (relax)…and there's a noise that you try to get lower and slower, and it would reach a certain level; and I'd start worrying about whether it's low enough.

Six participants expressed that their current drugs/therapies were working even though they did not like taking medication. Because the medications they were taking to get rid of the headache were currently working, they were reluctant to try anything else. Lucy had a simple answer that seemed to sum it all up:

> I guess it's easy when you hurt like that, you know you've got something that works, it's hard to try much else….

Benefits

Biofeedback as a natural therapy that teaches relaxation are the two themes that emerged from the participant interviews identifying this therapy as beneficial. The idea that biofeedback is a more natural treatment emerged from both the participants who had tried biofeedback previously and from those who had not. Six out of nine participants stated they did not like

taking medication and four participants expressed concerns about long-term effects from medication intake. Diane explained:

> I think there's always a disadvantage when you're putting a chemical into your body to control it. That really does bother me. I always wonder about what the long-term effects of taking this once a month are. I'm just a firm believer that anything you put in your body is gonna have an effect, and Imitrex hasn't been out that long. P robably five years from now they'll say, oh, those poor people who were taking Imitrex, now they've got tumors in their brain or something. And I'll be going, it worked so well, too bad. I see that as the older I get, where a quick fix was always just the thing that I thought was most important… now I see that taking better care of my body is the most important thing. I would be able to get away from all the chemicals I'm putting in my body if biofeedback worked for me.

Marsha also agreed that biofeedback would be a more natural therapy and would prefer it over medication. Her feelings about taking medications were similar to Diane's:

> I don't like to take medications. I wonder what it's gonna do to me in the long run. I don't know what it's doing to my liver and how's my body handling all this.

Of the four participants who tried biofeedback, three felt that it helped them relax.

> Lucy was the only one who felt she could not relax:
>
> I wasn't comfortable with the therapist…talking to a stranger, I guess, makes me tense.

Both Donna and Sally experienced improvements in their headaches after having biofeedback therapy. Donna felt her pain level decreased with biofeedback and that the abdominal breathing and visualization were excellent. Sally continued to use biofeedback and commented about her feelings:

> I think it really helps. It's my time for my body to be quiet. If I could do biofeedback everyday, I'd probably be wonderful." Jill stated that "It was a good experience. Mainly it taught me how to relax, and that was a benefit for me."

Discussion

The major finding of this study was the discovery that there were more barriers perceived to obtaining biofeedback for this rural sample of women than there were benefits. While the identified benefits of biofeedback therapy were important, the barriers were numerous.

There was a general consensus that biofeedback would be a beneficial therapy because it was considered natural. Six of the nine participants were concerned about long-term effects of the medications they were taking or just did not like taking medications in general. These women would agree with Gallagher (1991) that avoidance of significant pharmacological therapies is desirable, but for different reasons. While researchers are aware of issues related to efficacy (Bogaards & ter Kuile, 1994; Gallagher, 1991), participants were concerned about the long-term side effects, but were satisfied with the efficacy of their medications. They were concerned with getting rid of the headache when it occurred rather than preventing the headache all together.

Time and travel presented the most significant barriers. Travel is an obstacle in most rural communities because it takes time, effort, and money (Veitch et at. 1995). The journey to see a biofeedback therapist for women in these two Wyoming counties would have taken 1 to 2

hours (traveling at 60 miles per hour) because all lived in areas that are not adjacent to a metro area. Because participants led busy lives, taking the required time to travel was not a viable option. However, all would have liked to either try biofeedback or would consider trying it again if it were offered locally. Unless rural health care providers are trained to provide biofeedback therapy, these obstacles are not easily overcome.

Participants viewed biofeedback as beneficial for learning how to relax, but did not have confidence that relaxing would eliminate their headaches. Eight of the nine participants were skeptical about the effectiveness of biofeedback. When identifying assumptions that form the background for discussion of biofeedback and applied psychophysiology, Schwartz & Schwartz (1995) indicate that "patients are skeptical about therapies with psychological features" (p.33). The participants in this study validated this assumption. Participants wanted proof that biofeedback worked before they were willing to try it themselves. These participants indicated that the most convincing evidence would stem from a success story of a friend or relative. This is consistent with the view that health-seeking behaviors of rural dwellers are powerfully affected by informal networks of family and friends (Weinert & Long, 1987).

Lack of knowledge about biofeedback was another identified barrier. Some studies have shown that lack of knowledge regarding services and their locations, lack of awareness of insurance benefits, and inadequate understanding of the disease process act as barriers (Melnyk, 1988). Headache patients need to gather information themselves on biofeedback therapy if their primary health care provider does not inform them. Use of the Internet is one way in which this barrier could be overcome.

Another problem related to lack of knowledge, is that individuals may perceive relaxation/biofeedback as a psychological treatment. Patient's perceptions, expectations, and

mood are among the important aspects of therapy and compliance (Schwartz, 1995). Because mental health professionals more often provide biofeedback-assisted relaxation therapy than other health care professionals, patients may perceive biofeedback as a psychological approach and many patients resist psychological therapies.

The health care provider has a powerful influence over patients. If biofeedback is not recommended by heath care providers, the patient may not pursue it, even if they had heard about it from another source. This could be a significant barrier for headache sufferers who trust the opinions and suggestions from their health care providers. All five of the participants who had not tried biofeedback had not been given biofeedback as a viable option by their primary health care provider. This may be a direct result of medical students having little education about complementary therapies and often viewing these therapies as less useful (Baugniet, Boon, & Ostbye, 2000; Kligler, Gordon, Stuart, & Sierpina, 2000). Many medical schools have incorporated formal training in complementary and alternative medicine in their curriculum (Bhattacharya, 2000). This is an important step. Mainstream and complementary medicine are both involved in health promotion, have a growing interest in the mind/body connection, and are attentive to the effects of patient/provider communication (Burg, 1996).

"Not being able to relax" was a frequently named barrier for those participants who had experienced biofeedback. "Not being able to relax" seemingly contradicts statements that biofeedback was beneficial because it teaches one how to relax. It may be that although biofeedback helps one learn how to relax in a general sense, the women had difficulty in achieving relaxation in the clinical setting. Only two of the participants verbalized an understanding that relaxation training and biofeedback therapy are geared toward prevention rather than the treatment of a headache.

Although cost is often a barrier, reimbursement did not seem to be an obstacle for these women to obtain biofeedback. Sally, who has been receiving biofeedback therapy for about two years, has not had to pay for any of her therapy because her insurance has covered all of the expense. Currently, many insurance companies and other third party payors reimburse for biofeedback therapy. If clients are informed that insurance will cover their biofeedback therapy, they may be more apt to pursue it.

Implications for Health Care Providers

Educating health care providers is important if referral rates for biofeedback are to increase. Continuing education, brochures, and in-services should be offered to rural health care providers to increase their awareness of biofeedback therapy as a treatment of choice for headache. The Biofeedback Society of America can offer current research and literature on biofeedback therapy for health care providers. Current biofeedback therapists need to reach out to people in rural communities where biofeedback is not available. This may mean setting up weekly clinics in small towns. Offering "specials," such as one free biofeedback therapy session, is a way to introduce patients to the concept of biofeedback. This would provide an opportunity to educate patients about the benefits of biofeedback therapy.

Brochures and pamphlets about biofeedback therapy should be available in primary care offices. This could increase the general public's awareness of biofeedback and could also remind health care professionals to discuss biofeedback therapy with their patients.

Implications for Future Research

There are several implications for future research. First, this study could be repeated with a larger sample population. Eventually a questionnaire could be utilized to survey a larger sample population assessing the barriers and benefits of biofeedback. Determining the

effectiveness of education in increasing awareness and acceptance of biofeedback therapy as a form of treatment is vital to the successful implementation of a referral system for rural clients.

Summary

Although biofeedback therapy is a primary modality for treatment of tension and migraine headaches, several barriers were identified for women in this sample related to obtaining this non-pharmacological form of treatment. These barriers may not be unique to the rural resident although time to travel long distances and the reliance on informal networks of family and friends for information seem to support Weinert and Burman's (1994) key rural concepts. Rural consumers and health care providers need to be educated that biofeedback therapy is a treatment of choice for tension and migraine headaches. The influence health care providers have on their patients, lack of education about biofeedback, increased travel to see a biofeedback therapist, and skepticism are all barriers to overcome if biofeedback therapy is going to become an accepted and more available form of therapy in rural areas.

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