

▶ **MEDICAL REVIEW**

# Social Support: A Role for Social Work in the Treatment and Prevention of Hypertension

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## ABSTRACT

Researchers have long noticed an association between social relationships and health. More recently, a vast and growing literature has developed, linking various forms of social support to hypertension, often even suggestive of a causal relationship. A detailed survey of this literature is presented, followed by a review of possible psychosocial and physiological explanations for the phenomena. Implications for social workers in various settings are emphasized.

## INTRODUCTION

Scientists have long noted an association between social relationships and health. Research beginning as early as the nineteenth century already established connections between the level of social integration and the likelihood of falling victim to accidents or suicide, suffering from psychiatric disorders like schizophrenia or depression, or even the chances of developing tuberculosis or arthritis (Cobb, 1976; House et al., 1988).

Beginning in the late 1970's, the study of social relationships and health was revitalized by the publication of seminal reviews by Cassel (1976) and Cobb (1976). By examining a large number of human and animal studies of a wide variety of types, they suggested that social relationships are strongly associated, perhaps causally, with good health. Both reviewers emphasized the stress-buffering effects of social support which were hypothesized to help maintain good health. Furthermore, Cobb accentuated the benefits to coping and adaptation provided by the knowledge that one is loved and cared for. By contrast, Cassel stressed the hypothesis that social integration might exert more direct influences on physiological processes.

Studies of social integration and health have often focused on forms of cardiovascular morbidity, such as hypertension (Rozanski et al., 1999; Shumaker and Czajkowski, 1994; Uchino et al., 1996). Hypertension is defined as systolic blood pressure (SBP) greater than or equal to 140 or diastolic blood pressure (DBP) greater than or equal to 90 (JNC VI, 1997). An important risk factor in many other disease states, hypertension has, for example, been implicated in atherosclerosis, stroke, heart attack, and other forms of cardiovascular mor-

bidity (for example, see JNC VI, 1997; MacMahon et al., 1990; Vander, Sherman, Luciano, 2001).

A very prevalent problem, essential hypertension was the most frequent diagnosis given to patients who visited physicians in 1990 (3.9%). In fact, every National Ambulatory Medical Survey since 1973 has reported that hypertension is the most commonly found morbidity related diagnosis (Eisenberg et al., 1993). More specifically, in the US, 25% of the adult population suffers from hypertension. In the United Kingdom, more than 20% have blood pressure levels rated as stage 2 hypertension or higher. In 1997 alone, hypertension was listed as the primary cause of death on over 42,000 U.S. death certificates (Steptoe, 2000). This paper will review research relating social integration and social support to hypertension. Practical application to the field of social work will also be discussed.

For purposes of this review, the term "social integration" will refer to relationships with family, friends, and other acquaintances, also referred to as a "social network." By contrast, the term "social support" will be broadly defined as "resources and interactions provided by others that may be useful for helping a person to cope with a problem" (Wills and Fegan, 2001). It should be noted, however, that within this broad definition, researchers have developed different perspectives on social support, reflected in their differing approaches to assessment and research design. For example, some researchers have focused on "structural social support," quantifying the number of supportive relationships individuals have. Others have measured social support in terms of the functions it provides, including emotional and material support. These will be considered and evaluated over the course of this analysis.

## RELATIONSHIP BETWEEN SOCIAL SUPPORT AND ELEVATED BLOOD PRESSURE

There is a vast and growing literature linking social support to hypertension, often even suggestive of a causal relationship. For example, one early study, performed by Rose, Hurst, and Herd (1979) found that air traffic controllers who sought interpersonal contact in times of stress had less elevated blood pressure than those categorized as "loners." Knox et al. (1985) exam-

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ined Swedish men between the ages of 26 and 32, hoping thereby to avoid potential confounding caused by the advanced or varying ages of subjects. Their sample, which included hypertensives, normotensives, and hypotensives, found an inverse relationship between the number of social contacts subjects reported and their blood pressure.

Similarly, Hanson et al. (1988) found that "social anchorage," a subcategory of social network, was inversely related to blood pressure in a sample of men born in the even months of 1914. A fourth study, conducted on a population of over 1400 men and women between the ages of 20 and 70, found a correlation between the size of subjects' social networks and lower blood pressure (Bland et al., 1990).

Dressler et al. (1986) tested this simple correlation by comparing the effects on blood pressure of the number of reported social contacts, and the amount of reported social support from friends, relatives, neighbors, and compadres (ritual kin) among residents of central Mexico. Among men, they found that all four measures of social support were negatively related to blood pressure, but that the amount of social contact was positively related to blood pressure. As such, it seemed that social support, and not social relationships generally, were associated with lower blood pressure.

Similarly, Knox (1993) measured the correlation of blood pressure, not with the number of social contacts, but with a social support rating based on "instrumental support" (availability of help with specific needs) and "emotional support" (feeling loved and cared for), among 29 male Caucasian university students. Those with higher perceptions of these types of support had lower DBP during rest and during the course of two laboratory stressors.

Malcolm and Janisse (1991) questioned whether level of satisfaction with one's degree of social integration determines hypertension. They studied 64 male officers in the Canadian Air Command between the ages of 30 to 54 and concluded that the number of supportive relationships was not related to blood pressure, though those reporting satisfaction with their level of social support did show lower systolic blood pressure (SBP). Similarly, Carels et al. (1998) examined structural social support networks and perceived satisfaction with social support in normotensive and borderline hypertensive adults. Subjects categorized as normotensive reported higher support satisfaction than those with borderline hypertension. By contrast, social support networks were not associated with normotensive status.

In sum, it appears that quantity of social contacts, or even the number of supportive social relationships, are less critical in predicting blood pressure levels than measures of satisfaction with available social support

or measures of the instrumental and emotional support generated by these relationships. Future studies might compare measures of satisfaction with social support to measures of functional social support. Such efforts should further refine our understanding of the effects of social support on blood pressure.

Studies relating blood pressure levels to social support resources in the workplace comprise a separate sub-field of research in this area. Rather than examining general social integration or support, they measure only that social support available to subjects at their place of employment. For example, in a sample of 148 working men and women from a variety of occupational groups (physicians, teachers, musicians, police and prison personnel, train engineers, and saw mill workers), Uden et al. (1991) found that those who reported low social support at work had higher SBP. Others have attempted to specify this effect. Winnubst et al. (1982), in a study of 1250 industrial workers, found no general buffering effect for social support on health measures, but having a supportive supervisor was associated with lower SBP and DBP in those who reported anxiety, depression, or a feeling of being threatened. Additionally, it was associated with lower DBP in smokers. This was confirmed by Matthews et al. (1987) in a study of 288 middle-aged male blue collar factory workers, who found that both supportive supervisors and supportive coworkers were associated with lower DBP.

Research examining social support and blood pressure in different cultural contexts allows us to generalize beyond the bounds of Western society. Thus, Waldron et al. (1982) pooled data from a multitude of studies drawn from 84 different societies. They found higher blood pressure to be associated with those societies where a decreased number of family ties was typical. Presumably, members of these societies had fewer supportive familial relationships.

Other studies have found relationships between social support and blood pressure among Tokelauan Islanders (Beaglehole, 1977), West Indians (Dressler, 1983), Asian and Pacific Islanders (Stavig et al., 1984), Mexicans (Dressler et al., 1986), Navaho women (Kunitz and Levy, 1986), Somoans (Hanna, 1996; Janes, 1990; Janes and Pawson, 1986), and African Americans (Brownley et al., 1996; Dressler, 1991; Strogatz and James, 1986). Finally, a study of Italian nuns found lower increases of blood pressure levels with age as compared to a control group (Timio et al., 1988). Despite initial conclusions drawn by the authors, a recent reviewer has suggested that the strong social ties present in that group were likely a contributing factor (Steptoe, 1997).

Social support has also been tested as a causal intervention to lower blood pressure. For example, elderly Swedish women, attending small discussion groups,

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focused on the role of retiree and her social, medical, and leisure services. These women reported more social contacts, less loneliness and meaninglessness, higher self-esteem, more leisure and vacation activities, and exhibited lower blood pressure when compared to their cohorts in a control group (Andersson, 1985).

Sallis et al. (1987) divided 78 employees of two San Diego high tech companies into three intervention groups. One learned and practiced relaxation exercises, such as breathing and muscle exercises, and mental imagery. A second focused on stress management, receiving training related to cognitive restructuring, coping strategies, as well as relaxation exercises. Members of a third group were educated about the harmful effects of stress, the importance of talking to others about stress, and the benefit of group support in stress management. While no group exhibited lower blood pressure at the study's conclusion, members of the first and the third group (which included the social support intervention) showed lesser increases of DBP compared with those in the stress management group.

Other social support researchers have worked toward modifying patients' lifestyles. For example, Clifford et al. (1991) followed four groups of Young Men's Christian Association (YMCA) members for one year. The first three groups took part in a health behavior modification program incorporating various types of social support, while a fourth served as control. At follow-up, all three social support groups had improved significantly more than control on a host of measures, including blood pressure, weight, percentage body fat, exercise adherence, and cardiovascular fitness. Hoff and Lowenstein (1994) incorporated the support of a nurse in helping elderly clients conform with recommendations provided at educational sessions focusing on positive health behaviors. They reported significant reductions in participants' DBP, weight, and serum glucose at completion of the program.

Finally, Scherwitz and Ornish (1994) incorporated social support into a treatment plan for the San Francisco Lifestyle Heart Trial. Focusing on elements of patients' biological, psychological, and social lives, they found that a combined approach, aimed at effecting diet, exercise, smoking, stress management, and social support was more effective in lowering blood pressure and other coronary risk factors than the traditional treatment plan.

While taken together the various cited papers suggest a relationship between social support and blood pressure, and even imply that social support may act causally to lower blood pressure, there is also a substantial minority of studies that attempted to relate social support to blood pressure, but do not support the findings of the rest of the research (Arnetz et al., 1983; Gill et al., 1984; Hansell, 1985; Houben et al., 1990; Kaufmann

and Beehr, 1986; Lercher et al., 1990). It should be noted, however, that Arnetz et al. (1983) did find that subjects in the social support condition improved on physiological and psychosocial measures other than blood pressure. Also, the subjects in the social support condition in the Gill et al. (1984) study did not demonstrate change at study's end in terms of their social support scores, thus questioning the relevance of their finding that those in the social support condition did not change in terms of their blood pressure. Nevertheless, most of the negative findings cannot easily be explained.

Also disturbing are the numerous methodological weaknesses which exist in those studies that do support the relationship between social support and blood pressure. For example, in the Scherwitz and Ornish (1994) study the controls were treated differently from the treatment group in so many ways that it is impossible to conclude that social support itself is an effective intervention. The studies of Sallis (1987) and Clifford et al. (1991) are similarly problematic. Furthermore, the Hoff and Lowenstein (1994) study did not even employ a control group at all.

While the present state of the literature does not allow for any definite conclusions, there is a clear need for additional research, especially studies that do not suffer from the methodological difficulties that now pervade the literature. However, the preponderance of evidence does suggest that social support may be beneficial in lowering blood pressure, and should be tested as a complement to therapeutic programs.

#### PHYSIOLOGICAL MECHANISMS

Theorists have often resorted to psychosocial explanations of the influence of social support on blood pressure. For example, social ties probably serve as deterrents to high risk behaviors like excessive alcohol consumption, smoking, and eating a fatty diet (Rozanski et al., Blumenthal, Kaplan, 1999). Furthermore, those individuals with more social support have been demonstrated more likely to comply with physicians' directives (Kirscht et al., 1981; Sanson-Fisher and Clover, 1995; Ornish et al., 1990). Also, social support has been credited with encouraging and helping affected individuals to respond more quickly to cardiac symptomatology (Allan and Scheidt, 1996).

Nevertheless, there are many physiologically based theories as well. One well developed theory is known as the social support-reactivity hypothesis. Its proponents suggest that harmful physiological responses may be prevented or alleviated by the presence of supportive others. For example, cardiovascular reactivity to stress, like increases in blood pressure, may be more sustained or extreme when experienced alone—perhaps because

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stressful stimuli are then perceived as more threatening. This theory is further based on the assumption that acute physiological changes occurring in response to stress may eventually influence tonic levels (Lepore, 1998).

Experimental studies endorsing this theory are of two types. The first type are those which have reported decreased cardiovascular reactivity to stressors when subjects are being actively supported by another individual. For example, Gerin et al. (1992) had female college students defend their opinions on controversial issues while two strangers were assigned to attack their views. A third confederate either watched silently or defended the views of the subject. In those instances where the subject was being supported, she showed lesser increases in blood pressure and heart rate.

A second group of studies focused on subjects who were receiving only passive forms of social support. This, too, proved adequate in reducing cardiovascular reactivity to various sources of challenge. For example, Kamarck et al. (1990) interviewed college-age females and also presented them with mental arithmetic and concept formation tasks. Some of the subjects had been instructed to bring a friend with them to the laboratory (social support condition), while others did not. Those receiving even passive social support showed lesser increases in blood pressure and/or heart rate during the various segments of the experiment.

A second theory is based on the adrenaline-hypertension hypothesis (Blankestijn et al., 1988), which posited that long-term elevation in blood pressure may be caused by the release of excess adrenaline in the body, usually in response to stress. Perhaps social relationships are helpful in preventing or moderating stressful situations, thereby preventing the release of excess adrenaline. Furthermore, there may be inherent stress caused by the situation of social isolation. In fact, Seeman et al. (1994) did find negative relationships between higher average and maximal frequency of emotional support, and levels of epinephrine (adrenaline), norepinephrine, and cortisol in the urine samples of elderly men. Maximum frequency of instrumental support had only a marginal association with epinephrine levels, but had a significant, negative association with norepinephrine and cortisol levels.

Another biological response to stressful situations is the release of glucocorticoids from the hypothalamic-pituitary-adrenal axis. These hormones lead to increases in blood pressure (Whitworth et al., 1989). As glucocorticoids remain in the blood stream for a longer period than do catecholamines like epinephrine, it is plausible that they play a more important role in chronic stress (Schwartz et al., 1996). Presumably, it is chronic stress which, when magnified under situations of social isolation, may lead to increased tonic blood pressure levels.

Another endocrine based theory involves the hormone oxytocin. Produced by the hypothalamus, it causes a decrease in blood pressure via its effect on central nervous system mechanisms. Knox and Uvnas-Moberg (1998) propose that oxytocin, which can be released by touch, massage, and warm temperature, might explain the effects of intimate relationships on blood pressure. They further hypothesize that it may also be released by the warm psychological contact characteristic of casual social relationships devoid of physical contact.

While the stress of social isolation would lead to relatively rapid increases in blood pressure via the above neuroendocrine mechanisms, it may also do so via additional, albeit slower acting mechanisms. After reviewing the literature, Lever (1986) has concluded that stress-related factors like catecholamines, corticosteroids, and angiotensin may eventually cause excessive growth of vascular smooth muscle. The resulting increase in peripheral resistance would logically lead to hypertensive states.

The stress of social isolation, and the stress moderating effects of social support, may also exert their influence on blood pressure via renal sympathetic nervous activity. Working with a population of men who were at high risk for hypertension, Light et al. (1983) demonstrated that psychological stress induced retention of sodium and fluids, factors known to increase blood pressure. She hypothesized that this was mediated by renal sympathetic nerve activity. A subsequent study with dogs (Anderson et al., 1987) showed the same effects for stress. Koepke et al. (1988) did a similar study with rats, but they also measured renal sympathetic activity, along with sodium retention. Results seemed to confirm the hypothesis of Light et al. Additionally, they denervated the kidneys of a group of rats and found that these rats did not show the same degree of sodium retention, also in consonance with Light's approach.

**IMPLICATIONS FOR SOCIAL WORK**

Traditional concepts in social work such as the ecological perspective and the life and interactionist models, have emphasized the importance of developing a proper fit between the individual and his environment (Ell, 1984; Lee and Swenson, 1978). As such, research and interventions involving social networks and support are fundamental to the theory and practice of social work. Furthermore, the association between these social factors and aspects of physical health is a developing theme in the profession. For example, recent studies have highlighted the role of social support in the care of patients suffering from breast cancer (Baldry and Walsh, 1999), HIV/AIDS (Kadushin, 1999), and cardiovascular disease, although the role of social work in the field of cardiovascular health has not been adequately explored (Berkman, 2000).

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Social workers in clinical settings or social service agencies should be aware that those with poor social support are also at risk for health problems, such as high blood pressure. Poor social support is often found among migrants, those recently released from institutions (Lee and Swenson, 1978) or experiencing other life role transitions (Ell, 1984), and the elderly (Schmidt, 1982), especially those with no living children, who report worse physical health than others their age (Giranda et al., 1999). Caretakers of frail or disabled adults are also at increased risk for inadequate social support, and often attribute emotional, and even physical illnesses like hypertension, to the strains of caretaking (Snyder and Keefe, 1985).

Social workers with hypertensive clients might supplement medical treatments with interventions aimed at enhancing social integration and support. Appropriate interventions might include strengthening existing social networks, or attaching an isolated individual to a new network. For example, Garrison and Werfel (1977) describe their use of the "network session." By counseling a client in the presence of the tens of individuals key to his social environment, they aim to strengthen his social network. Based on the family network approach developed by Speck and Attneave (1973), the network session might include relatives and friends, along with clergy, teachers, coworkers, probation officers, or any accessible significant others. Clinicians may even choose to diagram these social relationships as an aid to assessment or intervention (Hartman, 1978).

Interventions aimed at strengthening naturally occurring networks can exist on the community level, as well. For example, social workers might sponsor community psychoeducational programs directed at enhancing social ties and integration (Ell, 1984). Furthermore, they can play a critical role in assisting a community's informal caretakers, or strengthening the networks which spring up in places like hospitals, nursing homes, halfway houses, or the workplace (Swenson, 1979). Baker (1977) has specified the roles professionals can play in relation to naturally occurring support systems.

Some individuals have little or no extant social network at all. Such people should be referred to ethnic or religious groups, or support groups like Alcoholics Anonymous or Weight Watchers, depending on the need. Others may require the active and direct professional support that only the social worker himself can provide (Ell, 1984; Swenson, 1979). Attaching individuals to existing social networks can also be performed at the community level, as in the San Diego Cedar Community Center outreach program implemented by Collins and Pancoast (1976). The Center's staff went from house to house linking people with their neighborhood's natural, informal helpers, as well as telling them about the Center's own resources.

Medical social workers can play a particularly active role, as they are often in direct contact with those at risk for, or suffering from, hypertension and other illnesses. They should advocate that patients get adequate support from doctors, are referred for necessary counseling, and are offered the necessary emotional and instrumental support that they undoubtedly need. In suggesting approaches for social workers working with female breast cancer patients, Baldry and Walsh (1999) have unfortunately found that these social workers are often not doing a sufficient job in providing these services.

Finally, social workers would be wise to examine large-scale forces that might serve to impinge on proper social interaction. For example, social and organizational policies should be scrutinized to determine whether they might weaken the development or perpetuation of supportive ties, thereby hampering provision of support (Ell, 1984). As always, advocacy, whether personal, organizational, or political, must be an important part of the social worker's mandate.

**CONCLUSION**

The usual medical approach to lowering blood pressure is pharmacological therapy (JNC VI, 1997). While it is often effective, medications are far from a panacea. On average, less than 50% of hypertensives are adequately controlled with one drug, and only 70% are adequately controlled by two drugs. Even when three drugs are taken concurrently, about 10% still show abnormally high blood pressure levels (Rosen et al., 1993; Steptoe, 2000). Additionally, there are clear drawbacks to the use of drugs. For example, long-term treatment is expensive, side effects are problematic, and patient compliance is often poor (Linden and Chambers, 1994; Sanson-Fischer and Clover, 1995).

The literature reviewed herein clearly demonstrates that interventions aimed at enhancing social integration should be incorporated into efforts to lower blood pressure. Even if such interventions only serve to further lower blood pressure by relatively small amounts, that, too, would have great benefit from a public health standpoint. A meta-analysis involving 418,000 individuals across nine studies found that mean reductions in DBP as little as 5 mmHg reduce the risk of stroke by more than a third and that of coronary heart disease by more than a fifth (MacMahon, 1990).

The question that remains is why clinical medicine does not routinely apply psychosocial interventions in the treatment of hypertension. In a recent editorial, Scheidt (2000) suggests that this hesitancy is due, in part, to the paucity of information about how psychosocial factors lead to physiologic disease. Such lacunae create a barrier to the very acceptance of the idea.

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Presumably, this will fade as the understanding, and acceptance of, social interventions for hypertension grow. Perhaps, such treatments, in consonance with traditional pharmacology, will serve to increase our success in the battle against this most deadly disease. In the words of one recent reviewer, "Social work has the potential to contribute so much to the solutions that we need to find in order to deal with the complex problems around health... and the maintenance of social relationships" (Berkman, 2000). Indeed, it seems that this was what Richard Cabot intended when he developed the profession of medical social work (Cobb, 1976).

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