

Social support and subjective health complaints among patients participating in an occupational rehabilitation program

Irene Øyeflaten, Cand. san.¹,

Jeanne M. Gabriele, PhD²,

Edwin B. Fisher, PhD³ and

Hege R. Eriksen, PhD^{4,5}

From ¹ the National Centre for Occupational Rehabilitation, Rauland, Norway

² G.V. (Sonny) Montgomery Veteran Affairs Medical Center, Jackson, MS, US

³ University of North Carolina at Chapel Hill Gillings School of Global Public Health, Department of Health Behavior & Health Education, US

⁴ Hemil, Research Centre for Health Promotion, University of Bergen, Norway

⁵ Uni Health, Bergen, Norway

Correspondence address: Irene Øyeflaten, Nasjonalt kompetansesenter for arbeidsretta rehabilitering Rauland, NO-3864 Rauland, Norway. Telephone: +47 35062800, telefax: 35062801, E-mail: irene.oyeflaten@air.no.

Short title: Social support and subjective health complaints in occupational rehabilitation

ABSTRACT

Objectives:

To examine differences in rehabilitation patients' social support received from rehabilitation staff and from support providers outside rehabilitation, and to examine the relationships between social support and the patients' reports of subjective health complaints (SHC).

Methods:

131 patients (68 % females, mean age 45 years) participating in a 4-week, inpatient, occupational rehabilitation program were included. All patients completed questionnaires on demographic variables, SHC, and social support (Social Support Inventory, SSI) received from rehabilitation staff and from support providers outside rehabilitation. The factor structure of the Norwegian version of SSI was analysed identifying two factors; directive and nondirective social support.

Results:

Patients reported significantly more support from rehabilitation staff than from support providers outside rehabilitation, and they reported significantly more nondirective support compared to directive support. High directive support from providers outside rehabilitation was associated with more subjective health complaints.

Conclusion:

Norwegian patients participating in an occupational rehabilitation program reported more support from rehabilitation staff than from support providers outside rehabilitation and they reported more nondirective support compared to directive support. Only directive support from support providers outside rehabilitation was related to greater reports of subjective health complaints.

Key words:

Social support, subjective health complaints, interdisciplinary occupational/vocational rehabilitation, long-term sick leave.

INTRODUCTION

Social support is associated with various physical and mental health outcomes including mortality (1), immune function (2, 3), psychological adjustment (2, 4, 5, 6), and successful recovery (7). Social support may buffer the effects of negative experiences associated with stress (8) and is also fundamental in the adaptation and maintenance of health behaviors such as smoking cessation (9), weight loss (10), and chronic disease self-management (11). The current study adds to this literature by assessing relationships among two types of support, directive and nondirective support, and subjective health complaints in an occupational rehabilitation setting.

Fisher and colleagues have made a distinction between support that is directive and support that is nondirective (12, 13). This distinction is based on the roles and relationships assumed between the support provider and recipient. Directive support is prescriptive and guided by rules. When directive support is provided, the support provider takes over responsibility and tells the support recipient what to think, feel, or choose. In contrast, nondirective support involves cooperation with the support recipient and acceptance of the support recipient's thoughts and choices. When nondirective support is provided, the recipient maintains responsibility for tasks and decisions about goals. It is understood, however, that over a series of actual support exchanges, support providers typically provide a combination of these support types.

Nondirective support has been found to be positively associated with disease management, healthy lifestyles, quality of life, and support satisfaction whereas directive support has been found to have no effect or, in some cases, a negative effect on these outcomes (12, 13, 14, 15). There are, however, situations in which directive support can be advantageous, such as acute, stressful situations or in situations in which an individual lacks the necessary skills to handle a challenge (16, 17).

All studies on this nondirective and directive support distinction have been with samples from US. There may be cultural differences in how support is viewed, the type of support sought and provided, how support is used, and the effects of support on physical and mental health outcomes (18). Therefore, studies from other countries and cultures are needed to determine whether this nondirective and directive support distinction is found in other cultures and whether these support types are associated with health outcomes in other

cultures. The current study adds to previous literature by assessing this support distinction in a sample of Norwegian rehabilitation patients.

One outcome frequently encountered within the rehabilitation setting, and in which this nondirective and directive support distinction may be of importance, is subjective health complaints. Subjective health complaints are a term for “normal” complaints reported by the majority of individuals which do not necessarily reach the required threshold for verifiable diseases (19). Many of these conditions are non-specific conditions, often with little objective pathology or impairment (21, 22, 23, 24). Similar terms being used are functional disorders or medically unexplained symptoms. The intensity of subjective health complaints forms a continuum from normal complaints to conditions that require medical care and are incompatible with participation in social and working life (27). Thus, there is no obvious cut-off point to indicate what constitutes illness (27).

The prevalence of subjective health complaints is high in the general adult population varying from 75 % in a Nordic population (20) to 80 % reporting musculoskeletal complaints, 65 % “pseudoneurological” complaints and 60 % gastrointestinal complaints, in the Norwegian population (27). Similar findings are reported from the Philippines (28) and Kenya (29). Among long-term sick listed rehabilitation patients a high degree of co-morbidity of complaints has been reported with an average of 12 subjective health complaints during the previous 30 days, and with more than 80% of the patients reporting fatigue and neck pain (26).

Subjective health complaints have been associated with many negative outcomes, and are among the most frequent causes for seeking health care, granting sick leave, and long-term incapacity for work (20-22). In addition, musculoskeletal complaints and mild or moderate mental health problems are the most common reasons for long term sick leave and disability pension in Norway (23).

As previously mentioned, subjective health complaints are frequently encountered in the occupational rehabilitation setting. Within occupational rehabilitation programs, there has been a shift in management style, communication, and attitudes from the health care providers (22). Traditionally, a paternalistic style was adopted in which the provider takes over control and decides what is best for the patient. Although in some acute situations this

paternalistic style may be beneficial, this style may not be the best option in chronic and more non-specific conditions. In these situations, the patients may benefit from playing an active role in managing their own health actions (30). To help individuals better manage their conditions, occupational rehabilitation programs have started to adopt a more autonomous style that is client-centred, collaborative, and encourages the patient to be an active participant in his/her own health management (30). Thus, it appears that within the rehabilitation setting in Norway official and national practice guidelines are promoting a shift from using a predominately directive approach to a predominately nondirective approach (31). No studies, however, have assessed the support provided within a rehabilitation setting to determine whether more nondirective than directive support is provided and whether the type of support provided influences subjective health complaints.

Of course, individuals also receive support concerning their health problems from social networks outside the rehabilitation setting. This may be provided by family members or friends or from health care providers such as individuals' general practitioners. This suggests the opportunity to characterize support from within the rehabilitation centre in contrast to that reported from sources outside it.

This study was designed to examine whether the distinction between nondirective and directive support found in US samples would be replicated in Norwegian samples, to use this distinction to characterize support provided through rehabilitation centre relative to that reported from sources outside those centres, and to examine the relationships between such specific types of support and subjective health complaints. We hypothesized that factor analysis of social support measures would sustain the distinction between nondirective and directive support. We also hypothesized that, participants would report more nondirective than directive support from providers within the rehabilitation centre as well as more nondirective support from providers within the rehabilitation setting than from providers outside that setting. In addition, we hypothesized that nondirective support from both providers would be associated with lower reports of subjective health complaints and directive support would be associated with greater reports of subjective health complaints.

METHODS

Participants

Participants were recruited from a sample of 146 consecutive long-term, patients sick listed for diagnosis related to complex musculoskeletal and psychological health problems. They participated in a 4-week inpatient, interdisciplinary, occupational rehabilitation program during the spring 2005. Ninety percent (131 patients) participated in this cross sectional study, 89 women (68 %) and 42 men (32%). The patients were between the ages of 20 and 61 years ($M = 45.25$; $SD = 8.89$). Patients were admitted to the rehabilitation centre based on referrals from their general practitioners, National Health Insurance offices, or labour market agencies. They were recruited from both urban and rural areas. The patients were not charged for attending the program. Inclusion criteria at the rehabilitation centre were being motivated to participate in the program and having an intentional goal and plan to return to work. In addition, other relevant medical examinations and treatments such as x-rays and ordinary physiotherapy should have been tried before admittance to the program. Exclusion criteria at the rehabilitation centre were serious psychiatric disorders or undecided applications for disability pension or insurance claims. The patients answered questions on subjective health complaints and social support at the end of the 4-week rehabilitation program.

Comprehensive Interdisciplinary Occupational Rehabilitation

The aim of the occupational rehabilitation program was to help individuals on long-term sick leave and with complex health problems, improve their level of functioning, improve their work ability, and increase the likelihood of return to work. The fundamental concept of the rehabilitation program was that every individual is responsible for his/her own life and the direction he/she chooses, and is thus free to pursue actions in line with his/her own interests and preferences. The aims of the program were twofold: 1) to change the direction of the individuals' focus from pain and disability to an increased awareness of his/her own inherent resources, potentials and competences and 2) to guide patients towards making independent discoveries regarding the relation of body reactions to cognitive, affective and psychological factors in order to help them to discover skills within themselves.

The interdisciplinary rehabilitation team consisted of physicians, nurses, physiotherapists, occupational social workers, and sport pedagogues with specialized knowledge in occupational rehabilitation. To promote a collaborative environment in which the

rehabilitation team and the patient shared decision making, the members of the team introduced themselves as counsellors rather than as therapists or specialists. A structured examination/consultation was carried out on each patient by the team. The patients were given feedback from the physical examinations, including information and relevant explanation. The interdisciplinary rehabilitation program entailed six, one- hour sessions, five days a week and included a combination of individual and group based interventions with physical activity, education and cognitive behavioural modification. Self-confidence, coping, and learning were important objectives for all the activities offered.

Questionnaires

Two standardized questionnaires were administered: The Subjective Health Complaints (SHC) Inventory (21), and The Social Support Inventory (SSI) (14, 15). Demographic variables, level of education, occupation/work tasks, self-ratings of health and sleep, and length of sick leave were also assessed.

Subjective Health Complaints

The 29-item SHC Inventory measured subjective health complaints (21). Items assessed common somatic and psychological complaints experienced during the previous 30 days. Participants read the list of 29 complaints and indicated the severity of each complaint using a four-point scale (0=not at all, 1=little, 2=some, 3=severe). A total sum score as well as five subscales were computed: musculoskeletal complaints (8 items: shoulder pain, neck pain, upper back pain, arm pain, headache, low back pain, leg pain during physical activity, migraine), “pseudoneurology” (7 items: tiredness, anxiety, sleep problems, sadness/depression, dizziness, heat flushes, extra heartbeats), gastrointestinal complaints (7 items: epigastric discomfort, heartburn, dyspepsia, stomach pain, gas discomfort, diarrhoea, constipation), allergy (5 items: asthma, breathing difficulties, allergies, eczema, chest pain) and flu (2 items: cold/flu, coughing/bronchitis). The term “psuedoneurology” is used since this is the term used in the DSM IV for this cluster of complaints (19, 32). Complaints were considered to be severe if the participant indicated a score of 2 (some) or 3 (severe) for the item. The SCH Inventory has been found to have satisfactory validity and reliability (21).

Social Support

The 16-item Social Support Inventory (SSI; 12, 13) assessed perceived receipt of nondirective and directive social support. Eight items assess nondirective support (show

interest in how you are doing, make it easy to talk about anything you think is important, ask how you are doing, are available to talk anytime, ask if you need help, cooperate with you to get things done, provide information so you understand why you are doing things, and offer a range of suggestions) and eight items assess directive support (tell you to feel proud of yourself, push you to get going on things, don't let you dwell on upsetting thoughts, point out harmful or foolish ways you view things, solve problems for you, take charge of your problems, give you clear advice on how to handle problems, and tell you what to do). The SSI was translated from English into Norwegian according to recommendations for forward and backward translation. The patients completed this measure twice: once for support received outside the rehabilitation centre and once for support received from rehabilitation staff at the rehabilitation centre. On the first occasion, the patients were instructed, "Describe/identify the person you regard as your most important support provider at your home place regarding your health problems. Think of this/these person(s) while you fill in the questionnaires. On the second occasion, the patients were instructed "Think of the rehabilitation team at the rehabilitation centre (or the person within the rehabilitation team you regard as your support), while filling in." The English version of the SSI has been found to have adequate internal consistency (12, 13). For the present study, the validity of the distinction between nondirective and directive support was assessed by principal components analysis of responses to individual items and scores reflecting the distinction within the Norwegian sample were constructed.

Statistics

SPSS 14.0 and 15.0 for Windows was used for the statistical analysis. Descriptive data was determined for baseline characteristics. A principal components analysis (PCA) with Kaiser Oblimin rotation was performed on single items to examine the factor structure of the Social Support Inventory. Based on the factor structure, subscales were constructed by including the items with the highest loadings (above .4) and the secondary loading at least .2 less than the primary loading. Cronbach's alpha was used to determine the internal consistency of the subscales. Based on this factor analysis, scores for nondirective and directive support were calculated as the mean rating of items loading on each factor. A repeated-measures ANOVA with support type (nondirective or directive subscale of the SSI) and support provider (support within the rehabilitation centre vs. support outside the rehabilitation centre) as within subject factors and gender as a between subject factor was conducted to compare mean levels of each type of support by each type of support provider. Post hoc analyses assessing

differences in support profiles between the two groups of support providers were conducted by paired samples t-tests. Independent samples t-tests were conducted to explore gender differences and differences in subjective health complaints between this sample and a general population sample.

Hierarchical regression was conducted to assess whether social support was related to subjective health complaints. Separate analyses were conducted for musculoskeletal complaints, pseudoneurological complaints, gastrointestinal, allergy, and flu complaints as different dependent variables. The independent variables were entered into the equation in three successive steps. In each of these analyses, age and gender was entered as a covariate in the first step. In the second step, directive and nondirective support at the rehabilitation centre was entered into the models. In the final step, directive and nondirective support outside rehabilitation was entered into the models. This progression allowed for the evaluation of whether support outside the rehabilitation centre added any variance above that explained from support at the rehabilitation centre and within each type of support provider whether nondirective or directive support predicted subjective health complaints when controlling for shared variance. Analyses differed based on the dependent variable.

RESULTS

Demographic characteristics

Table I displays baseline characteristics on education and work. The patients were on sick leave for an average of 11 months ($SD = 11.2$; range 0 to 72 months) when initiating treatment at the rehabilitation centre. Seventy-five individuals (57%) were granted 100% sick leave, 22 (17%) 50% sick leave, 10 (8%) were on less than 50% sick leave and 6 (5%) were on active sick leave. Active sick leave is an arrangement, which allows the sick listed individual to participate in work while still receiving payments from the social insurance system. The aim of an active sick leave period is to keep the employee in contact with the workplace and to assess the employee's work ability while still disabled.

There were significant gender differences within occupational status ($p < 0.001$, χ^2), with more women in traditional female occupations, such as health care and education and more men in blue-collar jobs. Ninety-two individuals (69%) were married or living with someone.

Thirty-five patients (27%) reported their health as good or very good, 58 (44%) reported their health to be neither good nor bad, and 38 (29%) reported their health to be bad or very bad.

Thirty-nine patients (30%) described their quality of sleep to be good or very good the previous 3 months, 44 (33%) described their quality of sleep as neither good nor bad, and 48 (36%) described their quality of sleep as bad or very bad.

 Insert Table 1 about here

Subjective health complaints

The majority of patients reported some subjective health complaints during the previous 30 days; 96.2 % reported musculoskeletal complaints, 93.9 % reported "pseudoneurological complaints", 67.9 % reported gastrointestinal complaints, 43.5 % allergic complaints, and 42% reported flu. As shown in Table II, the participants reported more subjective health complaints than a general population sample (27) on three out of five subscales. The differences were significant for all subscales, except for allergy. The general sample reported significantly more flu complaints than the participants in this sample. Sleep problems, reported by 73.3% of the patients, was the most frequently reported single complaint followed by tiredness, low back pain, neck pain, headache and sadness/depression (see table III). Low back pain was the subjective health complaint that was most often identified as severe with 48.1% of participants endorsing some or severe low back pain (see table III).

Women reported more total SHC [\bar{x} =17.42, SD=9.66 vs. \bar{x} =13.22, SD=8.21; $t(129) = -1.04$, $p=0.016$], more SHC pseudoneurology [\bar{x} =5.45, SD=3.26 vs. \bar{x} =3.60, SD=2.73; $t(129) = -3.23$, $p=0.002$] and more SHC gastrointestinal complaints [\bar{x} =2.72, SD=2.80 vs. \bar{x} =1.71, SD=2.12; $t(129) = -2.11$, $p=0.040$] than men. There were no significant gender differences on SHC musculoskeletal complaints; women (\bar{x} =7.25, SD=4.81) and men [\bar{x} =6.32, SD=4.74; $t(129) = -1.04$, $p=0.299$]. There were gender differences on single SHC items for headache ($p=0.031$), sadness/depression ($p=0.001$) and gas discomfort (0.041); with women reporting more complaints than men.

Insert Table 2 and 3 about here

Sources of support

Prior to answering questions on the SSI, patients were asked to define whom they considered to be the most important supportive person(s) concerning their health problems outside the rehabilitation centre and within the rehabilitation team at the rehabilitation centre. The patients could mention several supportive persons within each of these categories. Regarding support outside the rehabilitation centre, 82 (62.1%) patients referred to a health care provider, 48 (36.4%) referred to a family member, 32 (24.2%) referred to a person at the work place, 26 (19.7%) referred to a friend, and 15 (11.4%) referred to an executive officer (“case handler” at a public office). For support from staff at the rehabilitation centre, 97 (73.5%) patients referred to the whole interdisciplinary rehabilitation team (consisting of 5 different health professions), 18 (13.6%) referred to the nurse, 16 (12.1%) referred to the physician, 11 (8.3%) referred to the vocational social worker, 10 (7.6%) referred to the physiotherapist, and 9 (6.8%) referred to the sport pedagogue.

Factor analysis of social support items

The 16 items of Social Support Inventory were subjected to principal component analysis (PCA), to assess the factor structure of the individual items of the SSI in the current Norwegian sample. Prior to performing PCA the suitability of data for factor analysis was assessed. For both groups the inspection of the correlation matrix revealed the presence of many coefficients of .3 and above. The Kaiser-Meyer-Okin value was .85, and .88 for support outside rehabilitation and support at the rehabilitation centre respectively, and the Barlett`s Test of Sphericity reached statistical significance in both cases. For each of support outside rehabilitation and support at the rehabilitation centre, PCA revealed three factors with eigenvalues exceeding 1. For support outside the rehabilitation centre, these three factors explained a total of 59.3 % of the variance (37.3 %, 12.1 % and 9.9 %, respectively). For support at the rehabilitation centre, the three factors explained a total of 60.2 % of the variance, explaining 40.5 %, 11.5 % and 8.2 % of the variance respectively. An inspection of the scree plots revealed a clear elbow-break after the second factor for both groups. It was therefore decided to retain two factors for further investigations.

The two-factor solution explained a total of 49.4 % of the variance for support outside the rehabilitation centre, and a total of 52.1 % of the variance for support at the rehabilitation centre (see Table IV). To aid the interpretation of these two components, oblimin rotation was performed. The rotated solution (Table IV) revealed the presence of structure, with both factors showing a number of strong loadings, and with most of the variables loading substantially on only one factor. Five items did not reach the predefined criterion with a loading of $>.4$ on one factor and the secondary loading at least $.2$ less than the primary loading. These items were therefore not included when calculating the sum scores of the two subscales. All factor loadings are reported in table IV.

According to these findings, in this Norwegian sample seven items on the ISS represent nondirective support and four items represent directive support. Scores based on means of these items were used in subsequent analyses. Two items loaded differently in the Norwegian sample compared with the original version of the ISS. Item 6; *Tell you to feel proud of yourself* loaded on the nondirective factor in the Norwegian sample, while it is identified as directive in the original ISS. *Offer a range of suggestions* loaded on the directive factor in the Norwegian sample, while identified as nondirective in the original version.

Nondirective and directive support

A main effect was found for support type, $F(1, 116) = 257.71, p < .001$. Across both types of support providers, participants reported receiving more nondirective support than directive support. A main effect was also found for support provider, $F(1, 116) = 40.32, p < .001$. Participants reported higher levels of support within the rehabilitation centre than outside the rehabilitation institute.

In addition, there was a significant interaction between support type and support provider. Reported support at the rehabilitation centre was higher than reported support outside rehabilitation for both nondirective and directive support (see table V). Reported nondirective support was greater than directive support in both groups of support providers ($p < 0.001$).

There were no overall main effects for gender, $F(1,116) = 0.049, p = 0.83$. However, women reported higher levels on nondirective support at the rehabilitation centre ($\bar{x} = 4.05, SD = 0.82$) than men [$\bar{x} = 3.72, SD = 0.94; t(120) = -2.00, p = 0.048$]; whereas, men reported higher levels

of directive support outside rehabilitation ($\bar{x}=2.34$, $SD=0.82$) than women [$\bar{x}=2.02$, $SD=0.69$; $t(119)=2.26$, $p=0.026$] There were no significant gender differences in nondirective support reported outside rehabilitation ($p=0.42$) or in directive support reported at the rehabilitation centre ($p=0.53$).

Relationships between social support and subjective health complaints

For each of the five subscales measuring subjective health complaints, hierarchical regression analyses assessed the contributions of social support outside the rehabilitation centre and social support at the rehabilitation centre. Table VI shows results from the first analysis containing musculoskeletal complaints as a dependent variable. In this analysis, age and gender explained 1 % of the variance in musculoskeletal complaints (see table VI). Adding nondirective and directive support at the rehabilitation centre explained an additional 1 % of the variance and adding support outside rehabilitation added 6 % to the explained variance in musculoskeletal complaints. In this final step of the equation, directive support outside rehabilitation was the only factor to predict musculoskeletal complaints, ($\beta = .278$, $p = 0.011$).

Being a female significantly explained the variance in pseudoneurology ($\beta = .276$, $p = 0.003$) (see table VII). Adding directive and nondirective support at the rehabilitation centre in the second step did not change the explained variance for any of these complaints. However, support outside rehabilitation added 6 % to the explained variance in pseudoneurology, with directive support outside rehabilitation explaining the largest part of the variance ($\beta = .287$, $p = 0.007$).

As shown in Table VIII, being a female was also related to gastrointestinal complaints ($\beta = .178$, $p = 0.056$). Support outside rehabilitation added 7 % to the explained variance in gastrointestinal complaints, with directive support outside rehabilitation, explaining 30 % of the variance ($\beta = .313$, $p = 0.004$).

There were no significant relationships between flu or allergic complaints and age, gender or type of support at the rehabilitation centre or outside the rehabilitation centre. Age and gender explained 0.6 % of the variance in allergic complaints.

 Insert Table 4 - 8 here

DISCUSSION

This study assessed whether nondirective and directive social support from two types of providers, outside and inside a rehabilitation centre, were related to subjective health complaints in a sample of Norwegian rehabilitation patients, and assessed differences in perceptions of received support between these two different types of support providers. Patients reported more support from rehabilitation staff at the rehabilitation centre than from support providers outside the rehabilitation centre. However, only support outside the rehabilitation centre explained variance in subjective health complaints. Within support from outside the centre, directive support was significantly associated with more musculoskeletal, pseudoneurological and gastrointestinal complaints.

The association between directive support outside the rehabilitation setting and greater subjective health complaints gives support to previous findings from United States' samples indicating that directive support may be associated with negative outcomes in clinical samples. For example, in a study of patients with Multiple Endocrine Neoplasia or Sporadic Medullary Thyroid Cancer directive support was associated with higher levels of depression and anxiety (33). Similarly, in a study of adults hospitalized for diabetes, directive support was associated with higher levels of depression (12). Additionally, in a study of patients with non-small cell lung cancer, directive support was related to less adaptive coping and depressive symptoms (15).

When assessing different types of complaints, directive support from providers outside the rehabilitation centre was associated with musculoskeletal, pseudoneurological and gastrointestinal complaints but not flu or allergy. Directive support may be important in the development and maintenance of more chronic conditions but does not have an effect on acute or infectious conditions like allergy and flu.

Although findings on the relationships among directive support and subjective health complaints are congruent with findings from previous studies, the findings showing a lack of relationship between nondirective support and subjective health complaints differ from findings from previous studies. In previous studies using both clinical and non-clinical samples from the United States, nondirective support is associated with lower depression, lower anxiety, and more adaptive coping showing a benefit for this type of support (13, 17,

33). In this Norwegian sample of rehabilitation patients, we did not find any beneficial effects of receiving nondirective support from rehabilitation staff nor from support providers outside the rehabilitation centre.

In addition to assessing relationships between different types of support and subjective health complaints, this study also assessed whether support from different support providers influenced subjective health complaints. When evaluating relationships among support and health outcomes, few studies have assessed support from providers within as well as outside a health care setting. In this study, patients reported more support from the rehabilitation team, on both subscales, than from support providers outside the rehabilitation centre. This may be partly due to the extended inpatient treatment at the rehabilitation centre. Patients receive four intensive weeks of rehabilitation and have five different health professionals providing social support. Outside of the rehabilitation centre, participants may have less support providers or receive support across domains other than health.

Rehabilitation programs tend to move away from a traditional medical model with a more directive support approach towards a patient-centred clinical model, which is more nondirective and focuses on patient autonomy (30). That participants perceive receiving more nondirective support than directive support from health care providers within the rehabilitation centre may indicate a shift towards cooperation, mutual understanding and alliance between the health care provider and patient.

The current study adds to previous studies on nondirective and directive support in that it is among the first studies to assess nondirective and directive support in a non-US sample. Findings from this study highlight cultural differences in perceptions of nondirective and directive support in this Norwegian sample versus US samples. The 16 items of Social Support Inventory were factor analysed to assess the factor structure of the individual items of the Social Support Inventory in the current Norwegian sample. As with US samples, factor analyses of these Norwegian samples showed a two-factor solution reflecting the distinction between nondirective and directive support. There were some minor differences on the loadings compared to the original version of the scale. Two items, “tell you to feel proud of yourself” and “offer a range of suggestions,” loaded on opposite factors in this sample than in the US samples. This difference in loadings may be explained by cultural differences between the United States and Norway and/or the perspectives of those undergoing an

intensive rehabilitation program. In Norway, "tell you to feel proud of yourself" gives support to the individuals' autonomy (nondirective) whereas in US samples, it appears to be understood as being told how to think or feel. In contrast, "offer a range of suggestions" may be taken as providing choices in the US, but appears to have been understood as burdening the recipient with multiple suggested courses of action in Norway. This supports a strategy in cross cultural study of identifying underlying dimensions that may be present across a variety of cultures, but for which the specific ways in which they are manifest may differ among those cultures.

The patients in this study were long-term sick listed due to musculoskeletal and psychological health problems. They reported many subjective health complaints in the previous 30 days when they filled in the questionnaires at the end of the 4-week inpatient rehabilitation, and they reported more complaints than a general population sample. This is in accordance with earlier findings in occupational rehabilitation (26, 33). Musculoskeletal complaints and psychiatric diagnoses are among the most common causes of sickness absence and long-term incapacity of work (22, 25).

Limitations of this study include a small sample and a cross-sectional study design. Additional studies with larger samples and both clinical and non-clinical samples are needed to confirm the factor structure of the Social Support Inventory for Norwegian samples. In addition, the cross-sectional design of this study makes it difficult to determine the direction of the relationships among nondirective support, directive support, and subjective health complaints. It remains uncertain whether the provider takes over responsibility and tells the patient what to do about her health problem because the patient is not able to manage on her own or whether directive support makes the patients have greater difficulties or feel more helpless. A study with a longitudinal design is needed to better determine the direction of relationships among these support variables and subjective health complaints. Finally, studies which use an experimental design and attempt to manipulate support provided may enhance our understanding of methods to deliver nondirective and directive support as well as the effects of each support type on subjective health complaints.

CONCLUSIONS

Taken together, these findings indicate that reported support from providers at a rehabilitation centre and outside the rehabilitation centre have differentiated relationships with subjective health complaints. Support from outside the rehabilitation setting is important in the development and maintenance of subjective health complaints such as pain, tiredness, anxiety, and gastrointestinal complaints. In particular, directive support outside the rehabilitation centre is significantly associated with greater musculoskeletal, pseudoneurological and gastrointestinal complaints. Clearly, fully understanding the role of social support in health and well being will require attention not only to the source of support (e.g., those inside versus outside the rehabilitation centre) but also to its characteristics and nature, such as whether it is nondirective or directive. Finally, it is striking that as much as social support may be shaped by cultural and regional differences, nevertheless the distinction between nondirective and directive support seemed to stand up well within a sample from Norway. This replicates a similar finding of validity of the distinction in a Thai sample in which factor analysis also sustained the nondirective-directive distinction amidst some variation in what items loaded on each factor. (35). It appears that, amidst variation in details of how they are expressed, underlying dimensions of social support such as nondirective-directive may have appreciable generality across cultures.

Key Points

- The distinction between directive and nondirective social support found in USA was replicated in a Norwegian sample in an occupational rehabilitation setting.
- Reported support from providers at a rehabilitation centre and outside the rehabilitation centre had differentiated relationships with subjective health complaints.
- Directive support from providers outside the rehabilitation setting was associated with more musculoskeletal, pseudoneurological, and gastrointestinal health complaints.

REFERENCES

1. Berkman LF, Syme SL. Social networks, host resistance, and mortality: a nine-year follow-up study of Alameda County residents. *Am J Epidemiol* 1979; vol. 109, no. 2, pp. 186-204.
2. Cohen S, Doyle WJ, Skoner DP, Rabin BS, Gwaltney JM Jr. Social ties and susceptibility to the common cold. *JAMA* 1997; vol. 277, no. 24, pp. 1940-1944.
3. Miyazaki T, Ishikawa T, Nakata A, Sakurai T, Miki A, Fujita O, Kobayashi F. et al. Association between perceived social support and Th1 dominance. *Biol Psychol* 2005; vol. 70, no. 1, pp. 30-37.
4. Berkman LF, Glass T. Social integration, social networks, social support, and health. In *Social Epidemiology*. New York: Oxford; 2000.
5. Brown GW, Andrews B, Harris T, Adler Z, Bridge L. Social support, self-esteem and depression. *Psychol Med* 1986; vol. 16, no. 4, pp. 813-831.
6. Symister P, Friend R. The influence of social support and problematic support on optimism and depression in chronic illness: a prospective study evaluating self-esteem as a mediator. *Health Psychol* 2003; vol. 22, no. 2, pp. 123-129.
7. Skarsater I, Rayens MK, Peden A, Hall L, Zhang M, Agren H, Prochazka H. Sense of coherence and recovery from major depression: a 4-year follow-up. *Arch Psychiatr Nurs* 2009; vol. 23, no. 2, pp. 119-127.
8. Thoits PA. 1995, Stress, coping, and social support processes: where are we? What next? *J Health Soc Behav* 1995; vol. Spec No, pp. 53-79.
9. Palmer CA, Baucom DH, McBride CM. Couple approaches to smoking cessation. In: Schmalings KB, Sher TG, eds. *The Psychology of Couples and Illness: Theory, Research, and Practice*. Washington, D.C.: APA; 2000: 311-336.
10. Wing RR, Jeffrey RW. Benefits of recruiting participants with friends and increasing social support for weight loss and maintenance. *Journal of Consulting and Clinical Psychology* 1999; 67, 132-138.
11. Gallant MP. The influence of social support on chronic illness self-management: a review and directions for research. *Health Educ Behav* 2003; vol.30, no.2, pp.170-195.
12. Fisher EB, La Greca AM, Greco P, Arfken C, Schneiderman N. Directive and nondirective support in diabetes management. *International Journal of Behavioral Medicine* 1997; 4(2), 131-144.
13. Harber KD, Schneider JK, Everard KM, Fisher EB. Directive support, nondirective support, and morale. *Journal of Social and Clinical Psychology* 2005; 24(5):691-722.
14. Walker MS, Larsen RJ, Zona DM, Govindan R, Fisher EB. Smoking urges and relapse among lung cancer patients: findings from a preliminary retrospective study. *Preventive Medicine* Sep 2004; 39(3):449-457.
15. Walker MS, Zona DM, Fisher EB. Depressive symptoms after lung cancer surgery: their relation to coping style and social support. *Psychooncology* Nov 22 2005.
16. Fisher EB, Bickle C, Harber K, Hughes CR, Jeffe DB, Kahl L. et al. Benefits of directive and nondirective support are moderated by severity of circumstances. 1997: Abstract presented at Annual Meeting of Behavioral Medicine, San Francisco, CA.

17. Jeffe DB, Freiman M, Fisher EB. Interactions of social support, stress, and type of menopause on depression. 1996: Paper presented at the American Psychological Association's Women's Health Conference, Washington, DC.
18. Kim HS, Sherman DK, Taylor SE. Culture and social support. *Am Psychol* 2008 vol. 63, no. 6, pp. 518-526.
19. Eriksen HR, Ihlebæk C. Subjective health complaints. *Scandinavian Journal of Psychology*. 2002; vol. 43, no. 2, pp. 101-103.
20. Eriksen, HR, Svendsrød R, Ursin G, Ursin H. Prevalence of subjective health complaints in the Nordic European countries in 1993. *European Journal of Public Health* 1998; vol. 8, no. 4, pp. 294-298.
21. Eriksen HR, Ihlebæk C, Ursin H. A scoring system for subjective health complaints (SHC). *Scand J Public Health* 1999; 27(1): 63-72.
22. Waddell G. Preventing incapacity in people with musculoskeletal disorders. *Br Med Bull* 2006; vol. 77-78, pp. 55-69.
23. Ihlebæk C, Brage S, Eriksen HR. Health complaints and sickness absence in Norway, 1996-2003. *Occup Med (Lond)* 2007; vol. 57, no. 1, pp. 43-49.
24. Eriksen HR, Ursin H. Sensitization and subjective health complaints. *Scandinavian Journal of Psychology* 2002; vol. 43, no. 2, pp. 189-196.
25. Eriksen HR, Ursin H. Subjective health complaints, sensitization, and sustained cognitive activation (stress). *J Psychosom Res* 2004; vol. 56, no. 4, pp. 445-448.
26. Øyeflaten I, Hysing M, Eriksen HR. Prognostic factors associated with return to work following multidisciplinary vocational rehabilitation. *J Rehabil Med* 2008; vol. 40, no. 7, pp. 548-554.
27. Ihlebæk C, Eriksen HR, Ursin H. Prevalence of subjective health complaints (SHC) in Norway. *Scandinavian Journal of Public Health* 2002; vol. 30, no. 1, pp. 20-29.
28. Eriksen HR, Hellesnes B, Staff P, Ursin H. Are subjective health complaints a result of modern civilization? *Int J Behav Med* 2004; vol. 11, no. 2, pp. 122-125.
29. Wilhelmsen I, Mulindi S, Sankok D, Wilhelmsen AB, Eriksen HR, Ursin H. Subjective health complaints are more prevalent in Maasais than in Norwegians. *Nord J Psychiatry* 2007; vol. 61, no. 4, pp. 304-309.
30. Cardol M, De Jong BA, Ward CD. On autonomy and participation in rehabilitation. *Disabil Rehabil* 2002; vol. 24, no. 18, pp. 970-1004.
31. Stortingsmelding nr. 21, 1998 [White Paper; report to the parliament/national assembly (Norwegian Storting)].
32. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)*, 4th Edn. American Psychiatric Association 1994; Washington DC.
33. Kung AL, Moley JF, De Benedetti MK, Walker MS, Fisher EB. Social support and distress among adults with Multiple Endocrine Neoplasia Type 2. *Society of Behavioral Medicine*, March 2004; Baltimore MD.
34. Hagen EM, Svensen E, Eriksen HR, Ihlebæk C, Ursin H. Comorbid subjective health complaints in low back pain. *Spine* 2006; vol. 31, no. 13, pp. 1491-1495.
35. Fisher EB, Earp JA, Maman S, Zolotor A. Cross-cultural and international adaptation of peer support for diabetes management. *Family Practice* 2009; Mar 10.

Table 1
 Baseline characteristics on education and work (n = 131).

Variables	n	%
Education		
Compulsory school	19	14
Upper secondary school	62	47
College/university	41	31
Higher university education	8	6
Work		
Blue-collar	25	19
White-collar	38	29
School or kindergarten	15	11
Health care sector	33	25
Service field	17	13
Working hours before granting sick leave		
Full time (100 %)	86	65
Part time (between 50 – 100 %)	24	18
Part time 50 %	9	7
Less than 50 % regular working hours	7	5

Table II

Mean (\bar{x}) and standard deviation (sd) for SHC. Separate values for men and women Rehabilitation centre (n=131; men=42, women=89), General population sample (n=1089; men=505, women=584).

		At rehab	General sample	t	p-value #
		\bar{x} (sd)	\bar{x} (sd)		
SHC-total	all	16.04 (9.40)	10.18 (8.39)	7.51	< 0.001
	men	13.22 (8.21)	8.11 (6.91)	4.64	< 0.001
	women	17.42 (9.66)	12.10 (9.10)	5.12	< 0.001
Musculoskeletal	all	6.94 (4.75)	3.78 (3.84)	8.77	< 0.001
	men	6.32 (4.74)	2.81(3.08)	6.84	< 0.001
	women	7.25 (4.81)	4.64 (4.22)	5.41	< 0.001
Pseudoneurology	all	4.84 (3.20)	2.23 (2.64)	10.51	< 0.001
	men	3.60 (2.73)	1.74 (2.24)	4.99	< 0.001
	women	5.45 (3.26)	2.66 (2.88)	8.35	< 0.001
Gastrointestinal	all	2.41 (2.61)	1.91 (2.44)	0.23	0.04
	men	1.71 (2.12)	1.63 (2.04)	0.26	0.79
	women	2.72 (2.77)	2.17 (2.74)	1.76	0.08
Allergy	all	0.93 (1.40)	0.81 (1.54)	0.96	0.41
	men	0.81 (1.14)	0.62 (1.24)	0.83	0.41
	women	1.00 (1.50)	0.97 (1.75)	0.19	0.85
Flu	all	0.94 (1.43)	1.24 (1.52)	-2.14	0.03
	men	0.83 (1.41)	1.15 (1.45)	-1.40	0.17
	women	0.99 (1.50)	1.32 (1.58)	-1.83	0.07

Significance level is based on t-tests. p<0.05 when numbers in bold

Table IV

Factor loadings in a principal component analysis (PCA) (Kaiser Oblimin rotation) on the 16 single social support items in 131 rehabilitation patients reporting support from two different support providers. PCA retaining items if they load > .400 on a factor and the secondary loading is at least .200 less than the primary loading.

Items	Social support outside rehabilitation		Social support at rehabilitation	
	Nondir	Directive	Nondir	Directive
7 Cooperate with you to get things done	.829*	.199	.763	.384
5 Make it easy for you to talk about anything you think is important for you	.783	.081	.816	.270
3 Ask if you need help	.781	.416	.781	.510
1 Show interest in how you are doing	.773	.184	.782	.334
9 Ask how you are doing	.766	.351	.773	.258
6 Tell you to feel proud of yourself	.744	.405	.649	.229
13 Are available to talk anytime	.634	.159	.649	.230
15 Offer a range of suggestions	.220	.816	.333	.771
12 Tell you what to do	.297	.707	.295	.722
14 Point out harmful or foolish ways you view things	.163	.640	.231	.549
8 Push you to get going on things	.101	.485	.094	.546
Sums of squared loadings	5.97	1.93	6.50	1.84
% Variance	37.3	12.1	40.5	11.5
Cronbach's alpha (α)	0.89	0.64	0.88	0.66
<i>16 Don't let you dwell on upsetting thoughts</i>	.435	.609	.272	.558
<i>4 Take charge of your problems</i>	.529	.237	.588	.693
<i>2 Solve problems for you</i>	.431	.112	.477	.728
<i>10 Give you clear advice on how to handle problems</i>	.595	.684	.634	.589
<i>11 Provide information so you understand why you are doing things</i>	.574 [#]	.417	.677	.392

*Factor loadings above .400 are displayed in bold. [#]Items in cursive loaded less than .200 on the secondary loading or on two different factors in the different support provider groups.

Table V

Mean (\bar{x}) and standard deviation (sd) for nondirective and directive support reported at the rehabilitation centre and outside rehabilitation.

	Support at the rehab centre \bar{x} (sd)	Support outside the rehab centre \bar{x} (sd)	t	p-value#
Nondirective support	3.97 (0.86)	3.31 (1.01)	-6.71	<0.001
Directive support	2.50 (0.85)	2.11 (0.70)	-4.75	<0.001

Significance level is based on t-tests. $p < 0.05$ when numbers in bold

Table III

Ranked distribution of the 15 most reported subjective health complaints (SHC). Number and percentage.

Separate scores for men and women. χ^2 is calculated for gender differences. Severe complaints are reported separately.

Items	All		Men		Women		p-value #	All Severe complaints*	
	n=131	%	n=42	%	n=89	%		n=131	%
Sleep problems	96	73.3	27	64.3	69	77.5	0.110	58	44.3
Tiredness	94	71.8	26	61.9	68	76.4	0.067	58	44.3
Low back pain	86	65.6	29	69.0	57	64.0	0.574	63	48.1
Neck pain	79	60.3	25	59.5	54	60.7	0.841	55	42.0
Headache	78	59.5	19	45.2	59	66.3	0.031	38	29.0
Sadness/depression	76	58.0	16	38.1	60	67.4	0.001	29	22.2
Shoulder pain	75	57.3	25	59.5	50	56.2	0.718	49	37.4
Gas discomfort	70	53.4	17	40.5	53	59.6	0.041	39	29.7
Arm pain	60	45.8	17	40.5	43	48.3	0.433	38	29.0
Upper back pain	60	45.8	19	45.2	41	46.1	0.795	35	26.7
Flu	51	38.9	15	35.7	36	40.4	0.604	20	15.3
Leg pain during physical activity	51	38.9	13	31.0	38	42.7	0.166	30	22.9
Diarrhoea	44	33.6	15	35.7	29	32.6	0.756	16	12.3
Dizziness	41	31.3	10	23.8	31	34.8	0.204	17	13.0
Anxiety	39	29.8	10	23.8	29	32.6	0.305	20	15.3

Level of significance based on Chi-square test. $p < 0.05$ in bold. *Severe complaints = a score of 2 (some) or 3 (severe) for the item.

Table VI

Hierarchical multiple regression analysis of social support with SHC musculoskeletal complaints as dependent variable (n=131).

Variables	Step 1		Step 2		Step 3	
	β	Sig.	β	Sig.	β	Sig.
	Beta	p-value	Beta	p-value	Beta	p-value
Age	.026	.782	.015	.877	.023	.800
Gender [#]	.089	.343	.075	.434	.128	.187
Directive support at rehab [^]			.037	.719	-.069	.525
Nondirective support at rehab [^]			.094	.364	.090	.393
Directive support outside rehab [^]					.278	.011*
Nondirective support outside rehab [^]					-.028	.782
R ² (Square)	.009		.021		.080	
Adjusted R ² (Square)	-.008		-.013		.030	
R ² (Square) change	.009		.012		.059	
Significant change (F)	.594		.493		.032*	

[#]men = 1, women = 2. [^]High score is great directive and nondirective support from support provider at rehabilitation or outside rehabilitation.

*p < 0.05

Table VII

Hierarchical multiple regression analysis of social support with SHC pseudoneurology complaints as dependent variable (n=131).

Variables	Step 1		Step 2		Step 3	
	β	Sig.	β	Sig.	β	Sig.
	Beta	p-value	Beta	p-value	Beta	p-value
Age	-.021	.817	-.023	.799	-.017	.849
Gender [#]	.276	.003*	.280	.003*	.336	.000**
Directive support at rehab [^]			.046	.641	-.072	.498
Nondirective support at rehab [^]			-.012	.908	.009	.932
Directive support outside rehab [^]					.287	.007*
Nondirective support outside rehab [^]					-.113	.251
R ² (Square)	.075		.077		.136	
Adjusted R ² (Square)	.059		.044		.089	
R ² (Square) change	.075		.002		.059	
Significant change (F)	.011*		.894		.026*	

[#]men = 1, women = 2. [^]High score is great directive and nondirective support from support provider at rehabilitation or outside rehabilitation.

*p < 0.05, **p = 0.001

Table VIII

Hierarchical multiple regression analysis of social support with SHC gastrointestinal complaints as dependent variable (n=131).

Variables	Step 1		Step 2		Step 3	
	β	Sig.	β	Sig.	β	Sig.
	Beta	p-value	Beta	p-value	Beta	p-value
Age	.020	.826	-.017	.855	.023	.799
Gender [#]	.178	.056	.190	.048*	.251	.009*
Directive support at rehab [^]			.089	.379	-.042	.696
Nondirective support at rehab [^]			-.037	.721	-.008	.940
Directive support outside rehab [^]					.313	.004*
Nondirective support outside rehab [^]					-.146	.143
R ² (Square)	.033		.039		.111	
Adjusted R ² (Square)	.016		.005		.063	
R ² (Square) change	.033		.007		.072	
Significant change (F)	.148		.678		.014*	

[#]men = 1, women = 2. [^]High score is great directive and nondirective support from support provider at rehabilitation or outside rehabilitation.

*p < 0.05