ONLINE SOCIAL SUPPORT FOR WEIGHT CONTROL AND IMPROVED QUALITY OF LIFE

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ONLINE SOCIAL SUPPORT FOR WEIGHT CONTROL AND IMPROVED QUALITY OF LIFE

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Abstract

Previous research has shown that physical (face-to-face) social support and online social support can have a positive influence on the health outcomes of participants in health intervention programs. However, little is known about how the two types of support work when they are provided simultaneously compared to when they are provided separately. In this study, the effects of both types of support are assessed simultaneously to compare their impacts on the health outcomes of participants in a health intervention program. It is hypothesized that online social support and physical social support could significantly affect the health outcomes and the quality of life of the participants. The quasi-experiment method was used to investigate the outcomes of a 10-week physician-supervised weight loss program. In total, 53 volunteers participated in the study; and their health outcomes were measured in terms of changes in their weight, body mass index and quality of life. The results partially support the hypotheses and show that both types of support work when they are provided separately or simultaneously which significantly improved the participants’ weight and BMI loss and quality of life during the weight loss program. Furthermore, the results prove online social support could be an alternative to physical social support if users live in remote areas or have difficulty participating in the physical activities of a weight loss program. But the differences of both types of support provided simultaneously compare to both types of support provided separately were not significant.

Keywords: social support, health intervention program, health outcomes, quality of life, weight loss program, body mass index.
1 INTRODUCTION

The obesity epidemic, which started about 1980, is now a serious problem in nearly every developed country. The World Health Organization (WHO) has classified obesity as a major public health problem since 1997 (James, 2008). Each year, millions of individuals enroll in commercial and/or self-help weight loss programs. However, such programs are either expensive, have high attrition rates, or there is a high probability that participants will regain 50% or more of the weight they lost within 1 to 2 years (Tsai & Wadden, 2005). Also, Social judgment of appearance is responsible for unrealistic weight goals sought by young adults. Rosen and Gross (1987) reported that in 1,373 high school students, 63% of the girls and 16.2% of the boys reported being on weight-reducing regimens. Most female reducers were already normal weight. There is no universally effective weight management method that ensures long-term maintenance of weight loss (Wadden, Crerand & Brock, 2005). Despite this, a higher proportion of overweight or obese adults tried to lose weight in 2003 than in 1996, although the increase was relatively modest (53% vs. 51%) (Andreyeva et al., 2003).

In recent years, several studies have investigated how information systems can be used to change obese patients’ behavior through web-based health intervention. For example, Eysenbach (2008) observed that online social influence is central to many Health 2.0 and Medicine 2.0 applications. The study involved explicit modeling of the connections between people that form a complex network of relations, which in turn enables and facilitates collaboration and collaborative filtering processes.

Although previous studies yielded useful results, they only showed that physical (face-to-face) social support and online social support could improve the patients’ health outcomes of web-based health intervention programs when those supports are applied separately. There is a dearth of research on the effects of applying both types of support simultaneously. To address this research gap, we compare the impacts of online social support and physical social support on the health outcomes of a weight loss program when they are applied separately. Then, we assess the effect of providing both types of support simultaneously to the same group of participants. We also verify that both types of support can have a positive influence on the participants’ quality of life.

The remainder of this paper is organized as follows. The next section contains a review of the literature on obesity. In Section 3, we explain our hypotheses development and research model; in Section 4, we describe our method in detail; and in Section 5, we present the results of the study. Section 6 contains our concluding remarks.

2 LITERATURE REVIEW

In recent years, the Internet has become a popular source of health information for patients. Furthermore, Web-based health intervention can effect behavioral changes and improve health outcomes across multiple health conditions (Strecher et al., 2008; Jacobs et al., 2011). For example, it can lead to increased weight loss (Glasgow et al., 2007); a reduction in smoking (Cobb et al., 2005); increased physical activity (Heesch et al., 2003); and dietary changes, such as increased consumption of fruit and vegetables (Couper et al., 2003). However, many healthcare providers do not favor the practice. In our literature review, we identified three sources of tension between the stakeholders. First, physicians generally perceive Internet-based health information as problematic when introduced by patients during medical consultations. According to Ahmad et al. (2006), some physicians discourage their patients’ from accessing such information because it may have undesirable consequences, e.g., not consulting a physician when the health problem is serious, or doing so too late. Second, there is a risk that the information may be inaccurate. Third, the growing amount of online medical information provided by patients raised ownership and privacy concerns (Hughes, Joshi & Wareham, 2008). Such tensions may discourage people from accessing health information online; or they may make the wrong decisions about managing their diseases even if the information they access is accurate.
The rapid growth in social media could provide a way to minimize the risk of patients using inaccurate Internet-based health information, and may also address the ownership and privacy concerns mentioned above. Patients could use the Internet to discuss their medical experiences with other users, track medical conditions, and seek social support from their peers (Hughes, Joshi, Wareham, 2008). Wicks et al. (2010) conducted a study of patients who utilized the online health service PatientsLikeMe.com. They found that patients who used more features of the service (e.g., posted messages in the online forum) perceived greater benefits. Using social media to obtain health and medical information has a number of advantages; for example, the social media provide a wide variety of information, psychological and social support, tailored knowledge sharing and the anonymity aspect eases users' privacy concerns (Rice, 2006).

We believe the resources embedded in social capital are key factors in successfully changing the behavior of participants in, and improving the health outcomes of, web-based health intervention programs. The concept of “social capital” was initially used in community studies to highlight the importance of networks of strong, cross-cutting personal relationships in the survival and functioning of city neighborhoods. Such relationships develop over time and provide the basis for trust, cooperation and collective action in communities (Jacobs, 1965). Social capital broadly refers to the resources accumulated through the relationships among people (Coleman, 1988). Social capital is an elastic term with a variety of definitions in multiple fields, and has been linked to a variety of positive social outcomes, such as better public health, lower crime rates, and more efficient financial markets (Adler & Kwon, 2002), conceived of as both a cause and an effect (Resnick, 2001; Williams, 2006). Yli-Renko et al. (2001) suggested that two dimensions of social capital, namely, social interaction and network ties, are associated with greater knowledge acquisition. Tsai and Ghoshal (1998) observed that social capital is significantly related to the extent of inter-unit resource exchange. Meanwhile, Nahapiet and Ghoshal (1998) defined social capital as “the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit”. Social capital allows a person to draw on resources from other members of the networks to which he or she belongs. These resources can take the form of useful information, personal relationships, or the capacity to organize groups (Paxton, 1999). Moreover, social capital researchers have found that various forms of social capital, including ties with friends and neighbors, are related to indices of psychological well-being, such as self esteem and satisfaction with life (Bargh & McKenna, 2004; Helliwell & Putnam, 2004).

Kral et al. (1992) showed that the quality of life of obese individuals deteriorates as their weight increases. Many women report that their weight has a substantial impact on the perceived quality of life (Kolotkin et al., 1995). Measures of functional status and well-being, which are components of the quality of life, have been used to predict morbidity, mortality, and health care expenditures in other chronic conditions, such as coronary heart disease, arthritis, hypertension, and diabetes (Stewart, Greenfield & Hays, 1989).

Each year, millions of individuals enroll in commercial and self-help weight loss programs, including web-based programs. As increasing numbers of people utilize online social media, it is important to understand how online social support and physical social support work when they are provided simultaneously compared to when they are provided separately. Based on our investigation of the combined effect of two types of support on the health outcomes and the quality of life of participants in weight loss programs, we present three hypotheses.

3 HYPOTHESES DEVELOPMENT AND RESEARCH MODEL

The research literature on gerontology shows that people with dementia and their care-partners rate group intervention in health communities very positively. Patients and their care-partners find it helpful to talk with one another and with others in the same circumstances about the disease and its effects in an emotionally supportive atmosphere. (Zarit, Femia, & Watson, 2004). It has also been shown that higher levels of social support correlate with better diabetes self-management (Levy, 1983; Schafer, McCaul & Glasgow, 1986). Hence, we can infer that, in a weight loss program,
physical social support has a positive effect on participants’ health outcomes and quality of life irrespective of whether it is combined with online social support. This leads to our first hypothesis.

- **H1a.** Physical social support has a positive influence on the participants’ weight.
- **H1b.** Physical social support has a positive influence on the participants’ BMI.
- **H1c.** Physical social support has a positive influence on the participants’ quality of life.

According to social cognitive theory, people acquire knowledge by observing others within the context of social interactions, experiences, and outside media influences (Bandura, 1989). Hoch and Ferguson (2005) found that Web 2.0 communities compile resources and create shared knowledge that is beyond the scope of a single person. People that join an online healthcare community are not just seeking information or trying to solve a problem. They also regard the community as a place where they can meet people with similar problems, as well as seek mental support, friendship and a sense of belonging (Andrews, 2002; Zhang & Hiltz, 2003). Therefore, we hypothesize that online social support could have a positive influence on the health outcomes and quality of life of the participants in a weight loss program, irrespective of whether it is combined with physical social support.

- **H2a.** Online social support has a positive influence on weight loss.
- **H2b.** Online social support has a positive influence on BMI loss.
- **H2c.** Online social support has a positive influence on participants’ quality of life.

We hypothesize that online social support could be an alternative to physical social support, the health outcomes between physical only social support are no significant different to online only social support.

- **H3a.** Online social support and Physical social support have the same effect on participants’ weight loss.
- **H3b.** Online social support and Physical social support have the same effect on participants’ BMI loss.
- **H3c.** Online social support and Physical social support have the same effect on improving the participants’ quality of life.

Social capital is comprised of the trust that develops between individuals, the norms of reciprocity and the intensity of civic associations that facilitate cooperation for mutual benefit. We believe social capital is one of the key factors in successfully changing the behavior of participants in health intervention programs based on physical social support and/or online social support. The changes lead to improved health outcomes and quality of life. Hence, we hypothesize that, in a weight loss program, physical social support and online social support have the same effect on participants’ weight loss, BMI loss and quality of life.

- **H4a.** Both types of social support provided simultaneously and provided separately have the same effect on participants’ weight loss.
- **H4b.** Both types of social support provided simultaneously and provided separately have the same effect on participants’ BMI loss.
- **H4c.** Both types of social support provided simultaneously and provided separately have the same effect on improving the participants’ quality of life.

The research model in Figure 1 illustrates Hypotheses 1, 2, and 3.

*Figure 1: The Research Model*
4  METHOD

As mentioned earlier, we used the quasi-experiment method to conduct a 10-week weight loss program with both physical and online social support. The program was comprised of (1) physician-supervised sessions, and (2) assessment of the participants sharing their knowledge/experience through a physical social support group, an online social support group or both support groups simultaneously. The physician-supervised sessions dealt with health education about topics like weight loss, nutrition, guidelines for physical activity, self-monitoring of caloric intake, the benefits of monitoring weight, meal planning, and reading food labels. The second component required the participants to share their knowledge/experience via a physical or an online healthcare community; explore the association between Internet-mediated social support and weight loss; and identify effective means of enhancing the support. None of the participants were prescribed any medication during the study.

The weight loss program was conducted at National Taiwan University (NTU) and supervised by doctors and nutritionists. The medical professionals provided counseling, and supervised the participants’ daily self-monitoring and the use of body composition monitors. The physical social support group participants were asked to attend weekly group sessions that involved weight and activity checks as well as sharing knowledge about weight control. Meanwhile, the online support group participants received the same physician-supervised consultations via the Internet. The members of the latter group could use social media to share their weight loss experiences, ask questions and receive answers from other participants. Each participant had to provide weekly data on his/her weight loss.

In this study, social support is an independent variable. It is divided into three types: (i) a combination of online and physical social support; (ii) only physical social support; and (iii) only online social support. The dependent variables are the health outcomes of the weight loss program. They measure changes in each participant’s weight, body mass index (BMI) and quality of life.

4.1. Procedures

The quasi-experiment involved 53 participants divided randomly into four groups as follows. (i) Group A (n=12): participants who attended the physical support group’s weekly discussion. They also joined the Facebook group for social media activities, such as exchanging weight management experiences and sharing dietary knowledge. (ii) Group B (n=11): participants who only attended the physical group’s weekly discussion sessions. (iii) Group C (n=17): participants who only joined the Facebook group for social media activities. (iv) Group D, control group (n=13): participants who did not join physical social support or social support activities. We measured the health outcomes, such as changes in the weight and BMI, on a weekly basis. Improvements in each participant’s quality of life were assessed in the 1st and 10th week of the program.

4.2. Participants

Participants were recruited from a pool of students at NTU. Details of the weight loss program were posted on the university bulletin boards, and interested students were asked to apply via the program’s website. The program’s physicians then screened the participants for eligibility. Applicants were rejected if they were (1) pregnant or lactating; (2) taking medication or had a medical/psychiatric problem known to cause weight loss or weight gain (unless the medication was long-term and the dosage was consistent); or (3) reported a medical or psychiatric condition that would have limited their ability to comply with the program's behavioral requirements. Potential participants also had to attend an orientation session and complete preliminary baseline records.

In total, 57 males and females were recruited for the study, but 4 dropped out during the study. The remaining 53 participants (Mean age =23.22 years; SD=4.71) completed the program successfully. Table 1 shows the participants’ baseline information, i.e., gender, age, weight, height and BMI.
Table 1. Demographic data of the participants

<table>
<thead>
<tr>
<th></th>
<th>N = 53</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Female : Male</td>
</tr>
<tr>
<td>Age</td>
<td>23.22a (4.71)</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>64.65 (11.41)</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>23.84 (3.81)</td>
</tr>
</tbody>
</table>

Data expressed as the Mean (Standard Deviation).

4.3. Design of the Facebook social media group

Facebook groups were created as social media platforms. The participants who joined one of the groups shared their weight loss experiences, dietary knowledge and health-related information with other members of the same group. Facebook groups provide a unique social network that facilitates behavioral changes through social contact. Members adopt a new behavior more readily if their social contacts display it (Poirier & Cobb, 2012). This effect may reflect the participants’ reliance on the actions of other members to determine the appropriate behavior in a given situation (informational social influence); or it may indicate an underlying desire to conform to the expectations of other members (normative social influence) (Deutsch & Gerard, 1955). Because Facebook enables participants to interact and share information, it can induce significant behavioral changes among the members, increase knowledge sharing and thereby improve health outcomes.

4.4. Data Collection

We assessed each participant’s health outcomes in terms of weight and BMI changes before the weekly physician-supervised group sessions. As mentioned earlier, changes in the participants’ quality of life were measured in the 1st and 10th weeks of the program. To evaluate the quality of life, we used the WHO Quality of Life-BREF (WHOQOL-BREF) instrument, which assesses an individual's perceptions in the context of his/her culture and value system, personal goals, standards and concerns. It has been used to reliably track the functional status and well-being of patients with a variety of chronic conditions; hence, it has considerable potential when applied to research on obesity and weight loss (Chang, Huang & Chang, 2010; Sarmiento et al., 2010). To collect the quality of life data, we used a five-point Likert-type scale. The scores are anchored (1 = very poor, 2 = poor, 3 = neither poor nor good, 4 = good, 5 = very good).

4.5. Statistical analysis

We measured changes in the weight and BMI between the 1st with the 10th weeks of the program by using a statistical test procedure of MANOVA on a given variable with corresponding 95% confidence intervals. Changes in the quality of life were measured by using a statistical test procedure of ANOVA. Then, to compare the four groups, we measured the weight, BMI and quality of life changes of the participants between the 1st with the 10th weeks of the program by performing 2X2 analysis of variance (ANOVA) on a given variable with 95% confidence intervals. For the statistical analysis, we used the SPSS software package for Windows (Version 7.0).

5. EMPIRICAL RESULTS

We compare the effect of weight, BMI and Quality of Life changes between physical social support, online social support and two types of support work when they are provided simultaneously. The average weight loss of participants in the physical social support groups (Group A and Group B) was -1.60kg (SD=1.55kg) vs. -1.14kg (SD=1.60kg) for those in the non-physical social support groups (Group C and Group D). BMI loss in the physical social support groups was -0.61 (SD=0.60) vs. -0.42 (SD=0.61) for those in the non-physical social support groups. The improvement in the quality of life in the physical social support groups was 0.38 (SD=0.32) vs. 0.23 (SD=0.42) for those in the non-physical social support groups. The average weight loss in the online social support groups (Group A and Group C) was -1.60kg (SD=1.70kg) vs. -1.03kg (SD=1.40kg) for those in the non-online social
support groups (Group B and Group D). BMI loss in the online social support groups was -0.59 (SD=0.64) vs. -0.39 (SD=0.55) for those in the non-online social support groups. The improvement in the quality of life in the online social support groups was 0.37 (SD=0.37) vs. 0.24 (SD=0.38) for those in the non-online social support groups.

A one-way between subjects MANOVA was conducted to compare the effect of weight and BMI changes with physical only, online only and both types of support work when they are provided simultaneously with control group (have neither physical nor online social support). There were no significant effect of changes of weight and BMI, [F(6, 94) = .973 , p = .448]. A one-way between subjects ANOVA was conducted to compare the effect of quality of life changes with physical social support, online social support and both supports conditions. There was a significant effect of changes of quality of life, [F(3, 104) = 2.648 , p = .053].

In the hypothesis H1, we proposed that the physical social support only could significantly increase health outcomes in weight loss program. Post hoc comparisons using the LSD revealed that the difference in weight loss between the group with only physical social support (Group B) and control group (Group D) was marginally significant (p = .097). The difference in BMI was marginally significant (p = .088) and the difference in quality of life is marginally significant (p = .070). H1a, H1b, and H1c are marginally supported by our empirical data.

In the hypothesis H2, we proposed that the online social support only could significantly increase health outcomes in weight loss program. Post hoc comparisons using the LSD revealed that the difference in weight loss between the group with only online social support (Group C) and control group (Group D) was marginally significant (p = .068). The difference in BMI was marginally significant (p = .077) and the difference in quality of life is not significant (p = .108). H2a, and H2b are marginally supported by our empirical data, but H2c is not supported.

Furthermore, Post hoc comparisons using the LSD revealed that the difference in weight loss between the group with both online and physical social support provided simultaneously (Group A) with control group (Group D) was marginally significant (p = .095). The difference in BMI was not significant (p = .107) and the difference in quality of life is significant (p = .007).

In the hypothesis H3, A one-way between subjects MANOVA was conducted to compare the effect of weight and BMI changes with physical only (Group B) and online only social support (Group C). There were no significant effect of changes of weight and BMI, [F(2, 25) = .465 , p = .633]. A one-way between subjects ANOVA was conducted to compare the effect of quality of life changes with physical only (Group B) and online only social support (Group C). There were no significant effect of changes of quality of life, [F(1, 52) = .037 , p = .849]. H3a, H3b, and H3c are supported by our empirical data.

Taken together, these results suggest that with either physical or online or both social supports do have significant effects on health outcomes compare to have neither physical social support nor online social support. Meanwhile, the results showed the health outcomes between physical only social support are no significant different to online only social support. Specifically, our results suggest that when subjects received social support from other peers they lost more weight, lost more BMI and increase quality of life, and online social support could be an alternative to physical social support. Table 2 shows the changes for each group after the 10-week intervention.

<table>
<thead>
<tr>
<th>Groups</th>
<th>A (n=12)</th>
<th>B (n=11)</th>
<th>C (n=17)</th>
<th>D : control group (n=13)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Social Support</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Online Social Support</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>-1.59† (1.59)</td>
<td>-1.61 (1.58)</td>
<td>-1.60 (1.82)</td>
<td>-0.53 (1.04)</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>-0.59 (0.60)</td>
<td>-0.63 (0.63)</td>
<td>-0.60 (0.69)</td>
<td>-0.20 (0.41)</td>
</tr>
<tr>
<td>Quality of Life</td>
<td>0.43 (0.27)</td>
<td>0.33 (0.36)</td>
<td>0.31 (0.45)</td>
<td>0.15 (0.38)</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>p = 0.95†d</td>
<td>0.97†</td>
<td>0.68†</td>
<td></td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>p = 0.107</td>
<td>0.88†</td>
<td>0.77†</td>
<td></td>
</tr>
<tr>
<td>Quality of Life</td>
<td>p = 0.007†c</td>
<td>0.070†</td>
<td>0.108</td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Changes in Weight, BMI and Quality of Life
Next, we also test hypothesis H4 to determine if there is any significant interaction effect between physical social support and online social support when they are provided simultaneously. The 2X2 between-groups analysis of variance (ANOVA) was performed on the participants' health outcomes in terms of weight loss, BMI changes, and improvement in the quality of life. The result showed that there is no significant interaction effect between both types of support in terms of weight loss (-1.61kg vs. -1.60kg; F(1, 49) = 1.571, MSe = 3.809, n.s.). BMI changes (-.63 vs. -.60; F(1, 49) = 1.677, MSe = .600, n.s.) and quality of life (.33 vs. .31; F(1, 104) = .237, MSe = .032, n.s.). Hence, Hypotheses 4a, 4b, and 4c are supported. That is, the effects on the participants’ health outcomes of both social supports provided simultaneously are as good as those achieved by online social support or physical social support provided separately. Thus, hypothesis H4 is strongly and completely supported by the empirical results.

<table>
<thead>
<tr>
<th>Source</th>
<th>Mean Square</th>
<th>df</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANOVA of Weight Loss data</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical vs. No (P)</td>
<td>3.693</td>
<td>1</td>
<td>1.523</td>
<td>.223</td>
</tr>
<tr>
<td>Online vs. No (O)</td>
<td>3.569</td>
<td>1</td>
<td>1.472</td>
<td>.231</td>
</tr>
<tr>
<td>Physical + Online</td>
<td>3.809</td>
<td>1</td>
<td>1.571</td>
<td>.216</td>
</tr>
<tr>
<td>Error</td>
<td>2.425</td>
<td>49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ANOVA of BMI data</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical vs. No (P)</td>
<td>.576</td>
<td>1</td>
<td>1.609</td>
<td>.211</td>
</tr>
<tr>
<td>Online vs. No (O)</td>
<td>.427</td>
<td>1</td>
<td>1.194</td>
<td>.280</td>
</tr>
<tr>
<td>Physical + Online</td>
<td>.600</td>
<td>1</td>
<td>1.677</td>
<td>.201</td>
</tr>
<tr>
<td>Error</td>
<td>.358</td>
<td>49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ANOVA of Quality of Life data</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical vs. No (P)</td>
<td>.606</td>
<td>1</td>
<td>4.434</td>
<td>.038*</td>
</tr>
<tr>
<td>Online vs. No (O)</td>
<td>.447</td>
<td>1</td>
<td>3.273</td>
<td>.073†</td>
</tr>
<tr>
<td>Physical + Online</td>
<td>.032</td>
<td>1</td>
<td>.237</td>
<td>.627</td>
</tr>
<tr>
<td>Error</td>
<td>.137</td>
<td>104</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3. 2X2 ANOVA of Weight Loss, BMI and Quality of Life data

*** = p < .001; ** = p < .01; * = p < .05; † = p < .10.

The graphs in Figures 2, 3, and 4 illustrate, respectively, the health outcomes in terms of weight loss, BMI reduction and improvement in the quality of life.

Figure 2. Graph of Weight Loss  
Figure 3. Graph of BMI Loss  
Figure 4. Graph of QoL Improve
6 CONCLUSION

6.1 Discussion and Implications

The results partially support the hypotheses and show that both types of support work when they are provided separately or simultaneously significantly improved the participants’ weight and BMI loss and quality of life during the weight loss program compared to the control group (have neither physical support nor online support). Our findings suggest that when participants received social support from their peers, they lost more weight and their BMI scores were lower than those of participants who did not receive such support. These results are similar to those of Poirier and Cobb (2012) who found that membership of a web-based health intervention program improves the participants’ health outcomes. Chiu, Hsu and Wang (2006) showed that social capital influences knowledge sharing in virtual communities, and the expectation of better outcomes can induce knowledge sharing.

Furthermore, we compare both types of support provided simultaneously to physical support and online support provided separately. Our research yielded two key findings. First, the combination of online social support and physical social support improves the quality of life significantly compared to online social support. The improvement is marginally significant compared to that derived by physical social support.

We believe that online social support can help participants achieve “just-in-time” social capital sharing, which magnifies the effect of physical social support; thus, it further improves the participants’ quality of life. Moreover, online social support combined with physical social support can help participants develop stronger social capital. We speculate that the combination enables group members to overcome the barriers of a complex knowledge sharing process and share valuable information, especially when there is no extrinsic reward.

Second, there was no significant difference between the health outcomes of the three groups. The improvement in the health outcomes did not synchronize with the improvement in quality of life. After the 10-week physician-supervised program, the weight loss achieved by the members of the intervention groups was relatively modest. Hence, the differences in terms of improvement in health outcomes in this study were not significant. The results support the hypotheses that both types of support work when they are provided simultaneously or separately could have the same effects to the participants’ health outcomes. These findings differ from those reported by Swayze (2009). He pointed out that given the dramatic increase in new interactive features, such as member profiles, personal blogs and online social networks are used in virtual communities on the Internet. There are potential differences between the social ecology model of virtual communities and that of traditional physical communities related to type 2 diabetes.

6.2 Limitations and Future research

Our study has a number of limitations. First, the 53 participants may not be representative of all Internet users. Second, as the physical social support meetings were held on Saturdays, some participants might have dropped out because of the extra effort involved in commuting. Third, the online social support feature that uses Facebook is not all-inclusive because of the rapid improvements being made in this type of web service. There might be some new features that have not been included in this work, but they could be considered in future research. For example, it would be interesting to investigate whether social support could be provided by a dedicated online health service such as Patientslikeme.com. Users may derive increased benefits if they could develop social ties in a virtual community dedicated to healthcare. Alternatively, social support could be provided via mobile applications on smart phone devices or tablet computers. Users may benefit more if they could share health-related information with an online health community via smart mobile devices because other users could respond immediately.

6.3 Managerial implications

Our findings suggest that the social capital generated among members of social support groups may reflect each member’s reliance on the actions of other members to determine his/her behavior in a
given situation. It may also reflect a member’s desire to conform to the expectations of other group members. This phenomenon may explain why individuals are willing to share their health-related experience and knowledge with other members, and translate that knowledge into action, i.e., improve their quality of life. Bender et al. (2011) showed that social media have become popular platforms for raising awareness, fundraising, and seeking support for breast cancer sufferers. So far, they have attracted over one million users. Ramo and Prochaska (2012) found that social media provide a viable recruitment option for assessing the health of young-adult smokers; while Vyas et al. (2012) observed that social media are credible and essential methods of communication in the context of public health programs that target Latino youths.

Each year, millions of obese individuals enroll in commercial and self-help weight loss programs, including web-based programs. Our study shows that online social support can help obese individuals improve their health outcomes. Furthermore, online social support could be an alternative to physical social support if users live in remote areas or have difficulty participating in the physical activities of a weight loss program. Based on our results, we suggest that the designers of weight loss programs should add online social support activities to the physical social support activities in order to further improve the participants’ quality of life. Our findings could be used to design a new generation of weight loss programs, as well as web-based health intervention schemes for other diseases, such as diabetes, cardiovascular disease, and strokes.

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