Positive Mental Health and Self-Care in patients with chronic physical health problems: Implications for Evidence-based Practice

ABSTRACT

Background: The capacity for self-care and positive mental health (PMH) has an influence on well-being and on one's approach to chronic illness.

Purpose: The aim was to determine the level of PMH and self-care agency, as well as the relations among sociodemographic variables, PMH, and the level of self-care among patients with chronic physical health problems. We also examined correlations between PMH and self-care agency.

Methods: A Descriptive, cross-sectional correlational study. Sample of 209 patients at a primary care center. The instruments used were the Positive Mental Health Questionnaire (PMHQ) and the Appraisal of Self-Care Agency (ASA). The STROBE Statement was used.

Results: Significant differences were found in the PMH factors in relation to sociodemographic variables and health conditions. Suffering one or more chronic diseases was associated negatively, and significantly, with the capacity for self-care. The four most prevalent chronic health problems in the sample were hypertension, hypercholesterolemia, obesity, and diabetes mellitus.

Linking Evidence to Action: The study sample consisted of a general population of patients with chronic physical health problems seen in a primary care setting. In people with chronic physical health problems, there is a positive relationship between Positive mental health and self-care capacity. An increase in the possibility of caring for oneself saw an increase in positive mental health; conversely, an increase in positive mental health brought with it an increased capacity for self-care as well. Therefore, if actions are taken to increase positive mental health, the capacity for self-care will also be increased.

Key words: Chronic physical disease, Nursing, Positive mental health, Primary health care, Self-care.

BACKGROUND

Actions both of promotion and prevention should be applied to address specific needs that must be identified in the target population that is to be acted upon. In the case of people with chronic physical health problems, their quality of life over the course of their illness needs to be identified, assessing their capacity for self-care and their positive mental health; both constructs influence their well-being and the way in which they cope with their illness (Yıldırım, Axilar, Bakar, & Demir, 2013). Policy in Europe emphasizes the importance of carrying out interventions that promote mental health in the primary care setting (World Health Organization, 2015; EU Health Policy Platform, 2017). People can maintain their quality of life despite suffering from chronic diseases (Rapkin, 2017; Schwartz, Sajobi, Lix, Quaranto, & Finkelstein, 2013; Van, Kruitwagen, Visser, Van den Berg, & Schröder, 2016).

This is why both positive mental health (PMH) and the capacity for self-care are important constructs for people affected by chronic physical health disorders that require them to adapt their self-care in a specific manner, and to accept mentally, in as positive a way as possible, the chronic condition that has affected their physical health.

Regarding positive mental health, the positive dimension refers to the concept of mental well-being and the ability to adapt to adversity (World Health Organization, 2008). One of the first authors to work with the construct of PMH was Jahoda (1958); later Lluch (1999) put forward a multifactor model that explained PMH on the basis of six inter-related factors: Personal Satisfaction (F1), Prosocial attitude (F2), Self-control (F3), Autonomy (F4), Resolution of problems and self-actualization (F5), and Interpersonal relationship

skills (F6) (see Table 1). In order to assess the multifactorial model, the author created a questionnaire with detailed description in the methodology section (Positive Mental Health Questionnaire—PMHQ). Lluch's PMHQ (1999) has been examined in several studies and in various settings: people with schizophrenia (Miguel, 2014), chronic patients (Lluch et al., 2013; Sánchez, 2015), carers of people with schizophrenia (Albacar et al., 2015), mobile emergency medical service professionals (Mantas et al., 2015), university students (Roldán et al., 2017), and university professors (Hurtado et al., 2017). The questionnaire has also been translated into Portuguese (Sequeira et al., 2014) and Turkish (Teke & Baysan, 2018).

The other related construct, that of self-care, is an inherent function of the human being. The most important author working with this construct was Orem, she considered the capacity for self-care and the capacity to care for others (Orem, 2001). Following the line established by Dorothea Orem, the Appraisal of Self-Care Agency Scale (ASA) was created, which is described in detail in the methodology section below. The ASA scale has been translated into several languages and has been widely used in Europe, East Asia, and Latin America. It has been applied to patients with a number of different pathologies (Arda, Kizilci, & Ergor, 2017; Saleema, Panpakdee, Arpanantikul, & Teeradej Chai, 2016; Yıldırım, Axilar, Bakar, & Demir, 2013).

Although three studies have related the positive mental health and self-care, the first in patients with schizophrenia (Miguel, 2014), the second in carers of patients with schizophrenia (Albacar, 2014), and the third evaluating the effectiveness of a psychosocial nursing intervention in people with general chronic health problems (Sánchez, 2015), the present study is the only one the only one to measure the relation between positive mental health and self-care in patients presenting only chronic physical health problems.

PURPOSE

The aim was to determine the levels of PMH and self-care agency, as well as the relation of sociodemographic variables and conditions of physical health with those levels in patients with chronic physical health problems. Positive mental health includes aspects that are both independent of and related to other concepts (Hofmann, Luhmann, Fisher, Vohs, & Baumeister, 2014; Orpana, Vachon, Dykxhoorn, McRae, & Jayaraman, 2016). For this reason we also sought to identify the correlation between positive mental health and the level of self-care agency.

METHODS

Design

A Descriptive, cross-sectional correlational study, carried out from May through October, 2017.

Sample

The study population was made up of patients with chronic health conditions seen by the staff of the primary care unit at XXX in the town of XXX, on the southern flank of the XXX XXX area, in Spain. The inclusion criteria were age 45 or older (given that at younger ages the incidence if chronic illness is low), being assigned to the primary care center where the study was made, and making use of the nursing service at the center. The exclusion criteria were cognitive or mental disorders in addition to physical ones. A total of 425 individuals met the criteria. Non-probability sampling was used to put the sample together. The sample size for the study was n = 209 with an α risk = 0.05 for +/- 95% precision. Data collection was carried out between May and October 2017. The STROBE Statement was used (Von Elm et al., 2014).

Variables and Measures

The study variables were: a) *socio-demographic variables*; b) *employment status*; c) *physical health variables,* d) *positive mental health (PMH)*, and *e) capacity of self-care*. The instruments used are:

The Positive Mental Health Questionnaire: comprises 39 items which are unevenly distributed across the six factors that define the construct: Factor 1—Personal Satisfaction (8 items), Factor 2—Prosocial attitude (5 items), Factor 3—Self-control (5 items), Factor 4—Autonomy (5 items), Factor 5—Problem-solving and self-actualization (9 items), and Factor 6—Interpersonal relationship skills (7 items). The items take the form of positive or negative statements which are responded to on a scale ranging from 1 to 4, according to how frequently they occur: always or almost always, quite often, sometimes, rarely or never. The questionnaire provides a global score for PMH (sum of the item scores) as well as specific scores for each factor. The PMHQ has been validated in different studies with an alpha between 0.89 and 0.90 and a test-retest correlation of 0.85.

The Appraisal of Self-Care Agency scale: measures the overall capacity for self-care of people. It is made up of 24 items (16 positive and 8 negative). Questions 2, 6, 11, 13, 14, 15, 20, and 23 are reversed for scoring purposes. The scale has a Likert-type response format with four choices that are added up: Totally agree (4), Agree (3), Disagree (2), and Totally disagree (1). There is a range of results running from 24 (minimum self-care capacity) through 96 (maximum self-care capacity), with a cutoff point <48, below which there is low self-care capacity. Higher self-care higher score. The ASA scale was validated in Europe by Evers (1989) in several study groups. In the various studies analyzed it had alpha values ranging from 0.72 to 0.92 (Alhambra, Durá, Garcés & Sánchez; 2017; Guo et al., 2017; Sun & Soyoung, 2017). It has been translated into Spanish and validated in Spanish settings, showing a Cronbach's alpha coefficient of 0.77 (Gallegos, 1998).

Ethical Approval

The study was approved by the Ethics XX and XXXX. Written informed consent were obtained for all patients.

Statistical Analysis

The statistical package PASW 21 was used. As the basis for statistical significance, we considered an alpha level of < 0.05. We carried out a prior examination of the distribution of the variables. Frequencies and percentages were calculated for each of the qualitative variables, as were the mean and standard deviation for each of the quantitative variables. The Student's *t* test was used to compare the means of these two groups, and with one-way ANOVA when there were more than two groups. Variables were compared by means of Pearson's correlation.

RESULTS

Descriptive sociodemographic and employment status data

The sample consisted of more women than men (60.8% versus 39.2%). The age of the patients was concentrated between 66 and 75 years (35%) and more than 75 years (45%). Regarding marital status a significant proportion of patients were married (66%) or widowed (27%), and the most common number of children was two (53.1%). Regarding the educational level, an important proportion had no formal schooling (48.3%) or had only completed primary education (45%). As regards their employment status, 88.5% were retired.

Descriptive physical health conditions data

A high percentage of patients had hypertension (92.8%), also a high percent hypercholesterolemia (53.6%), obesity (50.7%), osteoarthritis (34.4%), diabetes mellitus

(27.8%), osteoporosis (15.3%), chronic obstructive pulmonary disease (13.9%) and hyperthyroidism (12%).

Other diseases identified were: cancer (10%), kidney failure (9%), heart Failure (8.1%), arthritis (7.2%), psoriasis (4.3%), hepatitis (2.4%), Parkinson (0.5%) and fibromyalgia (0,5%). Regarding the number of chronic physical health diseases that suffer 62.1% (n=87) had one to three health conditions while 37.9% (n=121) had four or more. Some 62.7% (n=131) took polymedication (6 or more different drugs per day), and 48.8% (n=102) were taking painkillers daily.

Correlations between PMH scores and sociodemographic characteristics

The mean global PMH score was X=132 (SD=13.0). As regards levels of PMH according to age, Pearson's test didn't show a significant correlation.

The reliability of the Positive Mental Health Questionnaire scored a Cronbach's alpha of 0.88.

Table 2 shows the correlation between PMH and gender, and revealed significant differences for four factors: F1, F2, F4 and F6. In Factor 2 (Prosocial attitude) and Factor 6 (Interpersonal relationship skills), women obtained a higher mean score than did men. In contrast, for Factors 1 (Personal satisfaction) and 4 (Autonomy) it was the men who had higher scores.

With respect to marital status, according to the ANOVA test married people showed a significant correlation with Factor 1 (Personal satisfaction) (p=0.004). The Bonferroni contrast test showed that those who were married fared better than those who were widowed (p=0.023). No significant differences were identified between the level of PMH in others sociodemographic variables.

Correlations between PMH scores and physical health conditions

The Student's *t* test was used to compare the means of these two groups. Significant differences in the level of PMH were found in relation to Chronic obstructive pulmonary disease (COPD) and two factors: Factor 2 (Prosocial attitude) and Factor 6 (Interpersonal relationship skills). Specifically, people who did not suffer COPD had higher scores than those who did. Significance was also seen in the level of PMH in relation to osteoporosis and Factor 2 (Prosocial attitude): those without the illness scored higher. In the case of diabetes mellitus those who did not suffer the disease had higher scores for Factor 5, while those who did not suffer hypothyroidism scored higher on Factor 6 than those who did. No significant differences were found in relation to the health conditions of hypertension, hypercholesterolemia, obesity or osteoarthritis (Table 3).With regard to those who were polymedicated, there was a significant correlation with respect to Factor 3 (Self-control) (t= -2.971; p=0.003). Those who were not polymedicated had greater self-control (Table 3). No significant differences were identified in the level of PMH with respect to analgesic consumption or daily consumption.

Finally, the relationship between PMH levels and the number of chronic physical health conditions was examined by means of Spearman's and Pearson's correlation coefficients. The analysis didn't reveal any significant correlation.

Descriptive ASA and correlations between ASA scores and sociodemographic characteristics

The reliability of the Appraisal of Self-Care scored a Cronbach's alpha of 0.80.

The self-care agency results obtained with the ASA scale showed an overall mean of 64.35 (SD= 6.23), with a minimum of 47 and a maximum of 94. No significant differences were found between the level of self-care agency and age, gender, marital status, level of education, number of children, nationality/place of birth, or employment status.

Correlations between ASA scores and physical health conditions

The fact of suffering pluripatology (more than one chronic disease) was negatively, and significantly, associated with the capacity for self-care (p=0.030). No significant differences were observed in the level of self-care agency in relation to physical health disease, polymedication, analgesic consumption, or daily consumption.

Correlations between ASA scores and PMH

A moderate but significant correlation was obtained between self-care agency and overall positive mental health (r=0.46; p<0.001). An increase in the possibility of caring for oneself saw an increase in positive mental health; conversely, an increase in positive mental health brought with it an increased capacity for self-care as well. In analyzing the relation between self-care agency and the various factors of positive mental health, all of the latter were seen to correlate positively with the former (Table 4).

DISCUSSION

A significant number of patients presented high or moderate levels of PMH, with the same results in another study of this topic carried out by Lluch et al. (2013). The results of the present study may thus be seen as helping to build upon evidence that already existed. As well, the data from Eurobarometro (2010) demonstrated that people have a greater capacity for feeling positive emotions than negative ones (European Commission, 2011). One of the factors coming into play in the perception of well-being and positive mental health is age, although the factors do vary according to age and generation (European Commission, 2011). In our sample we did not find significant differences between levels of PMH in relation to age, but the homogeneity of the sample in terms of age may be an influencing factor. In spite of this, it is important to continue considering this variable in

future studies, given that in the study carried out by Lluch et al. in 2013, with a sample very similar to ours in characteristics, it was seen that the overall level of PMH went down with advanced age (Lluch et al, 2013). And by the same token, a number of studies carried out on the general population have detected differences in PMH according to age (Sun, Chen, Johannesson, Kind, & Burström, 2016; Vaingankar et al., 2013). In our study, in examining the relation between gender and PMH factors, for Factor 2 (Prosocial attitude) women scored significantly higher than men (p=<0.001), as was the case in the study of Mantas et al. (2015) in which this difference was also statistically significant. Also, for Factor 6 (Interpersonal relationship skills), women obtained a higher mean score than did men (p=0.023). In contrast, for Factors 1 (Personal satisfaction) and 4 (Autonomy) it was the men who had higher scores, as was the case in the study of Lluch et al. (2013). Differences in positive mental health according to gender were also found in yet another study (Jeyagurunathan et al., 2017).

Regarding marital status, being married correlated with scoring significantly higher on Factor 1 (Personal satisfaction) than did being widowed; a number of studies have reported greater satisfaction and well-being in married people (Canadian Institute for Health Information, 2011; European Commission, 2011; Vaingankar et al., 2013). In contrast to this, in the Mantas study there was no relation between PMH and marital status (Mantas et al., 2015). The difference in the results may be attributable to the average age of the subjects in our study, which was higher than that of the study of Mantas et al. (2015), given that family status and being accompanied are important factors in satisfaction with life in older people, as noted in the recent study of Kutubaeva (2019).

We found no significant differences in the level of PMH according to the level of education or employment status a patient had, in line with the results of Lluch et al. (2013). However, other studies did indeed find a relation between having employment or a

higher level of education and a greater perception of well-being (European Commission, 2011; Gilmour, 2014; Jeyagurunathan et al., 2017).

In general terms, in the overall scores for PMH there was no single chronic physical health disease yielding significant differences in the PMH level reported by people both with and without it, which suggests the type of health condition in and of itself does not play a role in the PMH level, as was also noted in other studies (Lluch et al., 2013; Government of Canada, 2017). Although the Eurobarometer data indicated that having a physical health problem has a negative impact on positive mental health (European Commission, 2010), other studies report that high levels of well-being are beneficial both for the individual and for society, and that they are associated with enjoying good health and satisfaction with life (Cronly et al., 2018; Guo, Tomson, Keller & Söderqvist, 2018). Therefore, it is important to continue to carry out studies with healthy population samples in order to determine whether there are differences between healthy individuals and those with chronic health problems.

Nevertheless, significant differences were observed in terms of factors depending on whether or not pathology was present in the case of some health problems. For example, those not suffering osteoporosis or COPD had higher values for Factor 2 (Prosocial attitude). People not suffering hypothyroidism or COPD had higher values for Factor 6 (Interpersonal relationship skills). In the case of diabetes mellitus those who did not suffer the illness had higher scores for Factor 5 (Problem-solving and self-actualization). These data are not in agreement with those from the study of Lluch et al. (2013), in which they found a significant difference between those without hypertension scoring higher on Factor 4 (Autonomy) than those with this condition. These data make it clear that we need to further explore which factors in positive mental health may be reduced in various diseases.

Those not receiving polymedication had higher levels for Factor 3 (Self-control) (t= -2.971; p=0.003), in agreement with the results of Lluch et al. (2013), in which the patients who took more medication reported lower levels on four of the six factors (Satisfaction, Prosocial, Self-control and Problem-solving and self-actualization). Another study carried out among older adults related a poorer quality of life with polymedication (Acar & Karaçil, 2018).

There were no significant differences observed in the level of PMH according to analgesic consumption and daily consumption, in contrast to the study of Lluch et al. (2013) in which differences were found for Factor 1 (Personal satisfaction); patients who did not take painkillers on a daily basis reported greater satisfaction than those who did.

The population studied here scored medium-high on self-care agency. The results obtained with the ASA scale show an overall mean of 64.35 (SD= 6.23), similar to the scores from the study of Sánchez (2015), with a mean of 69.21 (SD=6.67).

No significant differences were found among the level of self-care agency and age, gender, marital status, level of education, number of children, nationality/place of birth, and employment status. In the study of Sánchez (2015) statistically significant differences were found between age and self-care agency (p=0.004), and between level of education and self-care agency (p<0.001). Another study concluded that self-care agency is directly related with age (Atashpeikar, Jalilazar, & Heidarzadeh, 2011).

Regarding the number of chronic physical health disease, the fact of suffering pluripatolgy was negatively, and significantly, associated with the capacity for self-care (p=0.030), as was the case with Sánchez (2015) with a significance of (p=0.039). There were no significant differences observed in the level of self-care agency according to polymedication, physical health disease, analgesic consumption, and daily consumption;

in contrast, in the study of Sánchez (2015) being polymedicated was negatively, and significantly, associated with the capacity for self-care (p=0.009).

Of note, the relation between positive mental health and self-care is a line of research that has generated a great deal of interest and the involvement of a range of authors (Albacar, 2014; Miguel, 2014; Orem & Vardiman, 1995). A moderate but significant correlation was found between self-care agency and positive mental health (r=0.46; p<0.001), as was the case in the study of Sánchez (2015), with (r=0.43; p<0.001). The greater the individual's agency in his or her own care, the higher the level of positive mental health. Conversely, as the level of positive mental health increases, so does the capacity for self-care. In the studies of Albacar (2014) and Miguel (2014), the Lluch PMH questionnaire was used, while for self-care the Scale of Self-Care Requirements (Escala de Valoración de Requisitos de Autocuidado—ERA) of Roldán-Merino (2014, 2017) was used. In both studies the results were positive regarding the existing correlation between the two constructs.

This study has at least four limitations. One limitation is that this study was carried out in a limited area, greater XXX, in XXX northern Spain. In addition there is the size of sample. The other limitations are the cross-sectional design, making it difficult to draw any causal conclusions, and the homogeneity of patient age, with all being older than 65.

.

The results need to be verified in studies with much larger groups of people having problems related to chronic physical health conditions. In addition, we were unable to establish correlations owing to the small number of people with some of the pathologies in question.

CONCLUSIONS

The four most prevalent chronic health problems in the sample were hypertension, hypercholesterolemia, obesity, and diabetes mellitus. Significant differences were observed in terms of gender and marital status with respect to various factors of positive mental health. In general, there was no single chronic physical health problem producing significant differences in the level of global PMH as reported by people with and without the condition in question. However, in terms of factors of PMH, there were found to be significant differences with the presence or absence of the following pathologies: osteoporosis, COPD, hypothyroidism, and diabetes mellitus. Those without these chronic illnesses scored higher for Factors F2 (Prosocial Attitude), F6 (Interpersonal Relationship Skills), F5 (Problem-solving and self-actualization), and F4 (Autonomy) than did those with the conditions. People who were not polymedicated scored higher for Factor 3 (Self-control). The question of which factors in positive mental health may be lowered by particular pathologies requires further examination. Most of the patients in the present sample presented high or moderate levels of PMH and medium-high levels of self-care agency. Suffering pluripatology is negatively, and significantly, associated with capacity for self-care. A moderate but significant correlation was found between self-care agency (measured with the ASA) and positive mental health (measured by the PMHQ).

LINKING EVIDENCE TO ACTION

- It is important to consider the multifactorial perspective of positive mental health in people affected by chronic physical health problems. The specific factors of Positive Mental Health involved on which we must act are: Personal Satisfaction, Prosocial Attitude, Self-control, Autonomy, Capacity for Problem Resolution and Self-Update and Interpersonal Relationship Skills.
- At the level of positive mental health, we must act taking into account the gender, marital status and type of chronic pathology.
- At the level of self-care capacity, we must act taking into account the amount of associated chronic pathologies.
- In people with chronic physical health problems, there is a positive relationship between Positive mental health and self-care capacity. An increase in the possibility of caring for oneself saw an increase in positive mental health; conversely, an increase in positive mental health brought with it an increased capacity for self-care as well. Therefore, if actions are taken to increase positive mental health, the capacity for self-care will also be increased.
- Nurses are relevant health professionals in the identification of factors related to self-care capacity and positive mental health.
- This study reinforces evidence concerning the relation between positive mental health and self-care in patients with chronic physical health problems.

References

Acar, N. &., Karaçil, M.S. (2018). Determinants of health related quality of life in home dwelling elderly population: appetite and nutritional status. *Journal of Nutrition*, *Health* & *Aging,* 22(8),996-1002. doi: /10.1007/s12603-018-1066-9.

Albacar Riobóo, N. (2014). Atenció d'infermeria a la cuidadora principal de persones amb esquizofrenia: Valoració dels requisits d'autocura i de la salut mental positiva. Doctoral thesis. Universitat Rovira i Virgili, Tarragona, Spain. Retrieved from http://www.publicacions.urv.cat/llibres-digitals/cum-laude/12-cum-laude/498.

Albacar, N., Lleixá, M., Lluch, MT., Sequeira.,C., Carvalho, JC., & Juan Roldán, J. (2015). Psychometric properties of the self-administered version of the Self-care Requisites Scale among carers for the mentally ill. *Revista Portuguesa de Enfermagem de Saude Mental*,13,53-60.

Alhambra, T., Durá, E., Garcés, J., & Sánchez, J. (2017). The Appraisal of Self-Care Agency Scale-Revised (ASA-R): Adaptation and validation in a sample of Spanish older adults. *Spanish Journal of Psychology*, Oct 23(20), E48. doi: 10.1017/sjp.2017.52.

Arda, H., Kizilci, S., & Ergor, G. (2017). The impacts of diabetes education on self-care agency, self-care activities and HbA1c Levels of patients with type 2 diabetes: A randomized controlled study. *International Journal of Caring Sciences January, April* 10(1), 479-489.

Atashpeikar, S., Jalilazar, T., & Heidarzadeh. M. (2011). Self-care ability in hemodialysis patients. *Journal of Caring Sciences,* 6, 29–33.

Canadian Institute for Health Information. (2011). Recognizing and exploring positive mental health policy dialogue: Synthesis and analysis. Ottawa: Canadian Institute for Health Information.

Cronly, J., Duff, A., Riekert, K., Horgan, A., Lehane, E., Perry, I., …Savage, E. (2018). Positive mental health and wellbeing in adults with cystic fibrosis: A cross-sectional study. *Journal of Psychosomatic Research*, 116, 125-130. doi: S0022-3999(18)30608-1. doi:10.1016/j.jpsychores.

European Commission: Mental Health. (2010). *Special Eurobarometer 345 / Wave 73.2.* Brussels: European Commission.

European Commission. (2011). *Eurobarometer qualitative studies. Well being*. Brussels: European Commission.

EU Health Policy Platform. (2017). Joint-statement on mental health for the EU Health Policy Platform. Retrieved from https://mhe-sme.org/joint-statement-on-mental-health-for-the-eu-health-policyplatform/

Hurtado, B., Moreno, C., Casas, I., Lluch, MT., Lleixà, M., Farrés. M., & Roldán, J. (2017). Positive mental health and prevalence of psychological ill-being in university nursing professors in Catalonia, Spain. *Journal of Psychosocial Nursing and Mental Health Services*,1,55(7), 38-48. doi: 10.3928/02793695-20170619-06.

Gallegos, E. (1998). Validez y confiabilidad de la versión en español de la escala:

Valoración de las capacidades de autocuidado. *Desarrollo científico de enfermería,* 6(9), 260-266.

Gilmour, H. (2014). Positive mental health and mental illness. *Health Reports*, 25(9), 3–9.

Government of Canada. (2017). Measuring positive mental health in Canada: Myths and facts. Government of Canada. Retrieved from https://www.canada.ca/en/public-health/services/publications/healthy-living/measuring-positive-mental-health-myths-facts.html.

Cheng, G., Guo, C., Tomson, G., Keller, C., & Söderqvist, F. (2018). Prevalence and correlates of positive mental health in Chinese adolescents. *BMC Public Health*, 18, 263. doi: 10.1186/s12889-018-5133-2PMCID: PMC5816379.

Guo, L., Zauszniewski, JA., Ding, X., Zhang, L., Gao, H., Guo, Q., & Liu. K. (2017). The Appraisal of Self-Care Agency Scale-Revised (ASAS-R): Reliability and validity among older Chinese people**.** *The Western Journal of Nursing Research*. (11), 1459-1476.doi: 10.1177/0193945916672821.

Hofmann W., Luhmann M., Fisher R.R., Vohs, KD., & Baumeister, RF.(2014) Yes, but are they happy? Effects of trait self-control on affective well-being and life satisfaction. *Journal of Personality*, 82, 265–277.

Jahoda, M. (1958). Current concepts of positive mental health. New York: Basic Books.

Jeyagurunathan, A., Vaingankar, JA., Abdin, E., Sambasivam, R., Seow, E., Pang, S., Picco, L., Chong, SA ., & Subramaniam M .(2017). Gender differences in positive mental

health among individuals with schizophrenia. *Comprehensive Psychiatry*, 74, 88-95. doi:10.1016/j.comppsych.2017.01.005.

Kutubaeva, RZh. (2019). Analysis of life satisfaction of the elderly population on the example of Sweden, Austria and Germany. *Population and Economics,* 3(3), 102-116. Retrieved from https://doi.org/10.3897/popecon.3.e47192.

Lluch, M. T. (1999). Construcción de una escala para evaluar la salud mental positiva. Doctoral thesis. Faculty of Psychology, University of Barcelona, Spain. Retrieved from http://www.tdx.cat/TDX-0331104-104403

Lluch-Canut, T., Puig-Llobet, M., Sánchez-Ortega, A., Roldán-Merino, J., Ferré-Grau, C., & Positive Mental Health Research Group. (2013). Assessing positive mental health in people with chronic physical health problems: Correlations with socio-demographic variables and physical health status. *BMC Public Health,* 13, 928.

Mantas, S., Juvinya, D., Bertran, C., Roldán, J, Sequeria, C., & Lluch, T. (2015). Evaluation of positive mental health and sense of coherence in mental health professionals. *Revista Portuguesa de Enfermagem de Saúde Mental,* 3(1647-2160), 34-42.

Miguel, D. (2014). Valoración de la salud mental positiva y de los requisitos de autocuidado, en personas hospitalizados diagnosticados de esquizofrenia, según la teoría de enfermería de Dorothea Orem. Doctoral thesis. Retrieved from https://www.tesisenred.net/handle/10803/275959

Orem, DE. (2001). *Nursing concepts of practice* (6th ed.). St Louis: Mosby.

Orem, DE., & Vardiman, E.M. (1995). Orem's nursing theory and positive mental health: practical considerations. *Nursing Sciencie Quarterly,* 8(4), 165-173.

Orpana H., Vachon J., Dykxhoorn J., McRae L., & Jayaraman G. (2016) Monitoring positive mental health and its determinants in Canada: the development of the Positive Mental Health Surveillance Indicator Framework. *Health Promotion and Chronic Disease Prevention in Canada Research, Policy and Practice,* 36, 1–10.

Rapkin, B., Garcia, I., Weslwy, M., Zhang, J., & Schwartz, C. (2017). Distinguishing appraisal and personality influences on quality of life in chronic illness: introducing the quality-of-life Appraisal Profile version 2. *Quality of Life Research*, 26, 2815–2829. DOI 10.1007/s11136-017-1600-y.

Roldán-Merino, J., Lluch-Canut, T.,Menarguez-Alcaina, M.,Foix-Sanjuan, A.,& Haro Abad, J. M. (2014). Psychometric evaluation of a new instrument in Spanish to measure self-care requisites in patients with schizophrenia. *Perspectives in Psychiatric Care*, *50*(2), 93–101. doi:10.1111/ppc.12026.

Roldán, J., Lluch, MT., Casas, I., Sanromà, M., Ferré, C., Sequeira, C., Falco, A., Soares, D., & Puig, M. (2017). Reliability and validity of the Positive Mental Health Questionnaire in a sample of Spanish university students. *Journal of Psychiatric and Mental Health Nursing,* 24 (2-3), 123-133.

Roldán, J., Miguel, D., Lluch, MT., Casas, I., Puig, M., Feria, I., & QuestERAWorking Group Psychometric. (2017). Properties of Self-Care Requisites Scale (SCRS-h) in

hospitalized patients diagnosed with schizophrenia. *Perspectives in Psychiatric Care*. 53,16–28.

Saleema, L., Panpakdee,O., Arpanantikul, M., & Teeradej Chai, A. (2016). The influence of basic conditioning factors and self-care agency on self-care behaviors in Thais with hypertension. *Pacific Rim Intational Journal Nursing Research, 20(1), 5-17.*

Sánchez, MA. (2015). Efectividad de un programa de intervención psicosocial enfermera para potenciar la agencia de autocuidado y la salud mental positiva en personas con problemas crónicos de salud. Retrieved from https://www.tdx.cat/bitstream/handle/10803/387116/MASO_TESIS.pdf?sequence=1

Schwartz, C. E., Sajobi, T., Lix, L., Quaranto, B. R., & Finkelstein,J. A. (2013). Changing values, changing outcomes: The influence of reprioritization response shift on outcome assessmentafter spine surgery. *Quality of Life Research*, 22(9),2255–2264.doi:10.1007/s11136-013-0377-x.

Sequeira, C., Carvalho, J. C., Sampaio, F., Sá, L., Lluch-Canut, T., & Roldán-Merino, J. (2014). Avaliação das propriedades psicométricas do Questionário de Saúde Mental Positiva em estudantes portugueses do ensino superior. *Revista Portuguesa de Enfermagem de Saúde Mental,* (11), 45-53.

Soyoung, C., & Sun, K. (2017). The influence of self-care agency and social support on self-care practice among spinal cord injured patients. *Korean Journal of Adult Nursing*, 29(6), 569-578.

Sun, S., Chen. J., Johannesson M., Kind, P., & Burström K. (2016). Subjective well-being and its association with subjective health status, age, sex, region, and socio-economic characteristics in a Chinese population study. *Journal Happiness Studies*, 17(2),833–873. doi: 10.1007/s10902-014-9611-7.

Teke, C., & Baysan Arabaci, L. (2018). The validity and reliability of Positive Mental Health Scale. *Anadolu Psikiyatri Derg,* 19,21-28.

Vaingankar J.A., Subramaniam M., Abdin E., Picco, L., Phua, A., Chua, BY., & Chong. (2013). Socio-demographic correlates of positive mental health and differences by depression and anxiety in an Asian community sample. *Annals of the Academy of Medicine* Singapore, 42(10), 514-23.

Van, AC., Kruitwagen, ET., Visser, JM.,Van den Berg, LH., & Schröder, CD.(2016). Associations between psychological factors and health-related quality of life and global quality of life in patients with ALS: a systematic review. Health Quality of Life Outcomes, Jul 20,14(1):107. doi: 10.1186/s12955-016-0507-6.

Von Elm, E., Altman, D. G., Egger, M., Pocock, S. J., Gøtzsche,P. C., Vandenbroucke, J. P., & Initiative, S. (2014). The strengthening the reporting of observational studies in epidemiology (STROBE) statement: Guidelines for reporting observational studies. *International Journal of Surgery*, *12*(12), 1495–1499.

World Health Organization (2008). *Action plan for the global strategy for the prevention and control of noncommunicable diseases* (2008-2013). Geneva: World Health Organization.

World Health Organization. (2015.) *The European Mental Health Action Plan 2013–2020.* WHO Regional Office for Europe, Copenhagen.

Yıldırım, A., Axilar, R.H., Bakar, N., & Demir, N. (2013). Effect of anxiety and depression on self-care agency and quality of life in hospitalized patients with chronic obstructive pulmonary disease: a questionnaire survey. *Inernational Journal Nursing in Practice,* 19(1), 14–22. .doi: 10.1111/ijn.12031.

Table 1. Multifactor Model of Positive Mental Health (Lluch, 1999)

PMH factors	Definition
F1: Personal satisfaction	- Self-concept/Self-esteem - Satisfaction with personal life - Optimistic outlook on the future
F2: Prosocial attitude	- Active predisposition towards the social/society - Altruistic social attitude; attitude of helping/supporting others - Acceptance of others and of differential social characteristics
F3: Self-control	- Ability to cope with stress/situations of conflict - Emotional balance/emotional control - Tolerance of frustration, anxiety, and stress
F4: Autonomy	- Able to have one's own standards - Independence - Self-regulation of one's behavior - Sense of personal security/self-confidence
F5: Problem-solving and self-actualization	- Analytical capacity - Able to make decisions - Flexibility/able to adapt to change - Attitude of continuous growth and personal development
F6: Interpersonal relationship skills	- Able to establish interpersonal relationships - Empathy/ability to understand the feelings of others - Able to give emotional support - Ability to establish and maintain close interpersonal relationships.

Table 2. Levels of Positive Mental Health (PMH) according to gender

	Gender	N	Mean± SD	t	p-value
Global PMH	Male	82	133.34±12.0	0.781	0.430
	Female	127	131.91±13.6		
F1. Personal satisfaction	Male	82	28.6±3.39	2.878	**0.004**
	Female	127	27.1±3.93		
F2. Prosocial attitude	Male	82	17.26±2.10	3.364	**0.001**
	Female	127	18.15±1.60		
F3. Self-control	Male	82	15.26±2.94	1.473	0.786
	Female	127	14.65±2.94		
F4. Autonomy	Male	82	18.29±2.14	2.097	**0.032**
	Female	127	17.55±2.76		
F5. Problem-solving and self-actualization	Male	82	30.42±3.49	0.682	0.501
	Female	127	30.07±3.85		
F6. Interpersonal relationship skills	Male	82	23.39±2.42	2.340	**0.023**
	Female	127	24.27±2.90		

Table 3. Correlations between PMH and physical health condition

Hypertension		**No.**	**Mean± SD**	**t**	**p-value**
F1. Personal satisfaction	Yes	194	27.79±3.79	0.144	0.885
	No	15	27.64±3.95		
F2. Prosocial Attitude	Yes	194	17.84±1.84	1.089	0.277
	No	15	17.28±2.09		
F3. Self Control	Yes	194	14.92±2.96	0.517	0.606
	No	15	14.50±2.79		
F4. Autonomy	Yes	194	17.82±2.60	0.555	0.579
	No	15	18.21±1.80		
F5. Problem-solving and self-actualization	Yes	194	30.14±3.73	0.971	0.333
	No	15	31.14±3.43		
F6. Interpersonal relationship skills	Yes	194	23.95±2.75	0.602	0.548
	No	15	23.50±2.82		
Hypercholesterolemia		**No.**	**Mean± SD**	**t**	**p-value**
F1. Personal satisfaction	Yes	112	27.42±4.11	-1.483	0.140
	No	97	28.19±3.36		
F2. Prosocial Attitude	Yes	112	17.78±1.74	-0.191	0.849
	No	97	17.83±1.99		
F3. Self Control	Yes	112	14.64±3.01	-1.328	0.186
	No	97	15.18±2.87		
F4. Autonomy	Yes	112	17.76±2.58	-0.479	0.632
	No	97	17.93±2.53		
F5. Problem-solving and self-actualization	Yes	112	29.79±3.75	-1.746	0.082
	No	97	30.69±3.63		
F6. Interpersonal relationship skills	Yes	112	23.81±2.96	-0.660	0.510
	No	97	24.06±2.49		
Obesity		**No.**	**Mean± SD**	**t**	**p-value**
F1. Personal satisfaction	Yes	106	27.38±4.10	-1.546	0.124
	No	103	28.19±3.41		
F2. Prosocial Attitude	Yes	106	17.86±1.95	0.467	0.641
	No	103	17.74±1.76		
F3. Self Control	Yes	106	14.74±3.00	-741	0.459
	No	103	15.04±2.90		
F4. Autonomy	Yes	106	17.60±2.82	-1.397	0.164
	No	103	18.00±2.23		
F5. Problem-solving and self-actualization	Yes	106	30.27±3.78	0.248	0.804
	No	103	30.14±3.66		
F6. Interpersonal relationship skills	Yes	106	24.08±2.99	0.834	0.405
	No	103	23.76±2.48		
Osteoarthritis		**No.**	**Mean± SD**	**t**	**p-value**
F1. Persona satisfaction	Yes	72	27.91±3.84	0.364	0.717
	No	137	27.71±3.78		
F2. Prosocial Attitude	Yes	72	17.73±2.05	-0.407	0.684
	No	137	17.84±1.75		
F3. Self Control	Yes	72	14.63±2.89	-0.908	0.365
	No	137	15.02±2.98		
F4. Autonomy	Yes	72	17.87±2.70	0.115	0.909
	No	137	17.83±2.48		
F5. Problem-solving and self-actualization	Yes	72	30.09±3.80	-0.319	0.750
	No	137	30.27±3.68		
F6. Interpersonal relationship skills	Yes	72	24.01±2.59	0.325	0.745
	No	137	23.88±2.83		

Table 3. Correlations between PMH and physical health condition (continuation)

Diabetes		**No.**	**Mean± SD**	**t**	**p-value**
F1. Personal satisfaction	Yes	58	28.0±3.87	0.507	0.612
	No	151	27.7±3.77		
F2. Prosocial Attitude	Yes	58	18.1±1.72	1.507	0.133
	No	151	17.6±1.90		
F3. Self Control	Yes	58	15.2±2.53	1.210	0.228
	No	151	14.7±3.09		
F4. Autonomy	Yes	58	18.2±2.04	1.263	0.208
	No	151	17.7±2.72		
F5. Problem-solving and self-actualization	Yes	58	29.87±3.94	2.128	**0.035**
	No	151	31.08±2.91		
F6. Interpersonal relationship skills	Yes	58	24.4±2.64	1.815	0.071
	No	151	23.7±2.77		
Osteoporosis		**No.**	**Mean± SD**	**t**	**p-value**
F1. Personal satisfaction	Yes	32	28.53±3.15	1.210	0.228
	No	177	27.64±3.91		
F2. Prosocial Attitude	Yes	32	17.70±1.87	1.988	**0.048**
	No	177	18.40±1.70		
F3. Self Control	Yes	32	14.96±2.27	0.154	0.878
	No	177	14.88±3.06		
F4. Autonomy	Yes	32	18.03±2.08	0.442	0.659
	No	177	17.81±2.63		
F5. Problem-solving and self-actualization	Yes	32	30.68±3.63	0.788	0.432
	No	177	30.12±3.78		
F6. Interpersonal relationship skills	Yes	32	24.37±3.10	0.998	0.320
	No	177	23.84±2.68		
COPD		**No.**	**Mean± SD**	**t**	**p-value**
F1. Personal satisfaction	Yes	29	27.89±3.90	0.171	0.865
	No	180	27.76±3.78		
F2. Prosocial Attitude	Yes	29	17.06±2.06	-2.331	**0.021**
	No	180	17.92±1.80		
F3. Self Control	Yes	29	14.72±3.02	0.335	0.738
	No	180	14.92±2.94		
F4. Autonomy	Yes	29	18.13±2.04	0.659	0.510
	No	180	17.80±2.63		
F5. Problem-solving and self-actualization	Yes	29	30.13±3.72	0.113	0.910
	No	180	30.22±3.75		
F6. Interpersonal relationship skills	Yes	29	22.89±2.46	-2.195	**0.029**
	No	180	24,09±2.76		

Table 3. Correlations between PMH and physical health condition (continuation)

Hypothyroidism		**No.**	**Mean± SD**	**t**	**p-value**
F1. Personal satisfaction	Yes	25	27.84±3.39	0.077	0.938
	No	184	27.77±3.85		
F2. Prosocial Attitude	Yes	25	18.40±1.55	1.701	0.090
	No	184	17.77±1.88		
F3. Self Control	Yes	25	15.24±3.07	0.622	0.535
	No	184	14.84±2.94		
F4. Autonomy	Yes	25	17.48±3.20	0.626	0.536
	No	184	17.89±2.46		
F5. Problem-solving and self-actualization	Yes	25	30.73±3.38	0.729	0.467
	No	184	30.14±3.76		
F6. Interpersonal relationship skills	Yes	25	23.75±2.75	2.574	**0.011**
	No	184	25.24±2.36		
Polymedication		**No.**	**Mean± SD**	**t**	**p-value**
F1. Personal satisfaction	Yes	131	27.70±3,74	-0.368	0.713
	No	78	27.91±3.90		
F2. Prosocial Attitude	Yes	131	17,73±1.98	-0.762	0.447
	No	78	17.93±1.63		
F3. Self Control	Yes	131	14.43±2.81	-2.971	**0.003**
	No	78	15.66±3.03		
F4. Autonomy	Yes	131	17.90±2.45	0.394	0.694
	No	78	17.75±2.73		
F5. Problem-solving and self-actualization	Yes	131	30.19±3.74	-0.099	0.921
	No	78	30.24±3.70		
F6. Interpersonal relationship skills	Yes	131	23.99±2.82	0,436	0.664
	No	78	23.82±263		

COPD: Chronic obstructive pulmonary disease

Table 4. Factor matrix of the correlation between self-care agency and positive mental health

	Total ASA	F1	F2	F3	F4	F5	F6	Total PMH
Total ASA	**1**							
F1.	.336*	**1**						
F2.	.276*	.269*	**1**					
F3.	.299*	.598*	.378*	**1**				
F4.	.277*	.373*	.112*	.341*	**1**			
F5.	.428*	.473*	.498*	.563*	.400*	**1**		
F6.	. 367*	.504*	.601*	.525*	.317*	.610*	**1**	
Total PMH	464*	.768*	.596*	.791*	.578*	.817*	.797*	**1**

ASA: Appraisal of Self-care Agency; **PMH:** Positive Mental Health; **F1**. Personal Satisfaction; **F2**. Prosocial Attitude; **F3**. Self-control; **F4**. Autonomy; **F5**. Problem-Solving and Self-Actualization; **F6.** Interpersonal Relationship Skills

***** Pearson correlation is significant (bilateral) <0.001

STROBE Statement—checklist of items that should be included in reports of observational studies

	Item No.	Recommendation	Page No.	Relevant text from manuscript
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	1	x
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	1	x
Introduction				
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	2	x
Objectives	3	State specific objectives, including any prespecified hypotheses	3	x
Methods				
Study design	4	Present key elements of study design early in the paper	4	x
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	4	x
Participants	6	*Cross-sectional study*—Give the eligibility criteria, and the sources and methods of selection of participants	4	x
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	4-5	x
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	4-5	x
Bias	9	Describe any efforts to address potential sources of bias	5	x
Study size	10	Explain how the study size was arrived at	4	x

Continued on next page

Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	4-5	
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	5-6	
		(*b*) Describe any methods used to examine subgroups and interactions	5-6	
		(*c*) Explain how missing data were addressed	-	No missing data
		(*Cross-sectional study*—If applicable, describe analytical methods taking account of sampling strategy	4	x
		(*e*) Describe any sensitivity analyses	5	x
Results				
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	6	x
		(b) Give reasons for non-participation at each stage	-	it didn't happen
		(c) Consider use of a flow diagram	-	-
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	5-6	x
		(b) Indicate number of participants with missing data for each variable of interest	-	it didn't happen
		(c) *Cohort study*—Summarise follow-up time (eg, average and total amount)	5	x
Outcome data	15*	*Cohort study*—Report numbers of outcome events or summary measures over time	-	-
		Case-control study—Report numbers in each exposure category, or summary measures of exposure	-	-
		Cross-sectional study—Report numbers of outcome events or summary measures	5	-
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	6-8	-
		(*b*) Report category boundaries when continuous variables were categorized	6-8	x
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	-	-

Continued on next page

Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	6-8	x
Discussion				
Key results	18	Summarise key results with reference to study objectives	9-12	x
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	12	x
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	9-12	x
Generalisability	21	Discuss the generalisability (external validity) of the study results	13-14	x
Other information				
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	Title page	X

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.

CHANGES MANUSCRIPT ID WVN-19-147

Title: "Positive Mental Health and Self-Care in patients with chronic physical health problems: Implications for Evidence-based Practice."

Dear Dr. Melnyk,

We would like to thank you very much for the opportunity to resubmit our manuscript ref. WVN-19-147 which has been modified in line with the reviewers' useful comments.

We greatly appreciate the suggestions and enclose a point-by-point response. As requested, modifications in the text of the manuscript have been highlighted.

Changes proposed by reviewer 1:

Comments to the Author
Thanks you for addressing the comments raised upon the original submission. My only remaining comment is that you could expand upon **the limitations** a little more? The homogeneity of patient age in your sample could be mentioned as a limitation for example.

Response (R): Thank you for your comments regarding our work. We have added the suggested limitation regarding the homogeneity of patient age in our sample.
Below we present the re-written paragraph:
This study has at least four limitations. One limitation is that this study was carried out in a limited area, greater XXX, in XXX northern Spain. In addition there is the size of sample. The other limitations are the cross-sectional design, making it difficult to draw any causal conclusions, and the homogeneity of patient age, with all being older than 65. Page 13.

Changes proposed by reviewer 2:

In the **abstract section,** I cannot find the positive relationship between positive mental health and self-care capacity in the results which have been illustrated in "**Linking evidence to action"**

Response (R): Thank you for your comments regarding our work. It is true that the positive relation between positive mental health and the capacity for self-care was unclear. For this reason we have changed the paragraph **in the abstract** (page 1) and also in the section entitled **Linking evidence to action** (page 15). Below is the re-written paragraph:

An increase in the possibility of caring for oneself saw an increase in positive mental health; conversely, an increase in positive mental health brought with it an increased capacity for self-care as well.

introduction section, the authors have mentioned the importance of conducting a study focusing on the positive mental health and self-care capacity, and introduced the instruments measuring the positive mental health and self-care capacity. Were there any studies which have determined the levels of PMH and self-care capacity and have explored the relationship between positive mental health and self-care capacity among patients? Why was it necessary to carry out this study

Response (R): Indeed, there were three studies relating positive mental health and self-care. One was in patients with schizophrenia (Miguel, 2014), another on the care of patients with schizophrenia (Albacar, 2014), and the third evaluating the effectiveness of a psychosocial nursing intervention in people with chronic health problems in general (Sánchez, 2015).
Nevertheless, our study is the only one to measure the relation between positive mental health and self-care in patients presenting only chronic physical health problems.
Suggested changes have been made at the end of the **introduction** on Page 3.
Below, we offer the re-written paragraph:
Although three studies have related the positive mental health and self-care—the first in patients with schizophrenia (Miguel, 2014), the second in carers of patients with schizophrenia (Albacar, 2014), and the third evaluating the effectiveness of a psychosocial nursing intervention in people with general chronic health problems (Sánchez, 2015)—the present study is the only one the only one to measure the relation between positive mental health and self-care in patients presenting only chronic physical health problems.

In **method section,** I am not clear why only patients with 45 or older were included.

Response (R): the reason for including only patients 45 or older is that from that age there is a greater incidence of people with chronic health problems seeking help in primary care. We should have made this clear.
Below, we offer the re-written sentence:

The inclusion criteria were age 45 or older (given that at younger ages the incidence if chronic illness is low). Page 4.

Please **provide the psychometric properties** of The Positive Mental Health Questionnaire and The Appraisal of Self-Care Agency scale **in the present study.**

Response (R): These data have been added at the end of the **Results section**. Below, we offer the re-written paragraph:
The reliability of the Positive Mental Health Questionnaire scored a Cronbach's alpha of 0.88. Page 7
The reliability of the Appraisal of Self-Care scored a Cronbach's alpha of 0.80. Page 8

Did you consider the **distribution of** the included data in the analysis?

Response (R): We did consider the distribution and carried out a prior examination of the distribution of the variables. We have added a comment to this effect in the data analysis section. Below, we offer the re-written sentence:
We carried out a prior examination of the distribution of the variables. Page 6.

In discussion section, as for marital status, please explain the **reason why there were different results.**
Response (R): We have added an explanation in the **Discussion section** (page 10) as well as a new reference (page 19).
Below, we offer the re-written paragraph and the reference:
The difference in the results may be attributable to the average age of the subjects in our study, which was higher than that of the study of Mantas et al. (2015), given that family

status and being accompanied are important factors in satisfaction with life in older people, as noted in the recent study of Kutubaeva (2019).

Kutubaeva, RZh. (2019). Analysis of life satisfaction of the elderly population on the example of Sweden, Austria and Germany. *Population and Economics,* 3(3), 102-116. Retrieved from https://doi.org/10.3897/popecon.3.e47192.

I found that the results of the present study were similar to those of the previous studies, so, **what the innovation of this study**

Response (R): this is the only study to consider the relation of positive mental health and self-care in patients with only chronic physical health problems.
Justification has been added to the **Linking box concerning evidence to action.** Page 15. Below, we offer the re-written sentence:
This study reinforces evidence concerning the relation between positive mental health and self-care in patients with chronic physical health problems.