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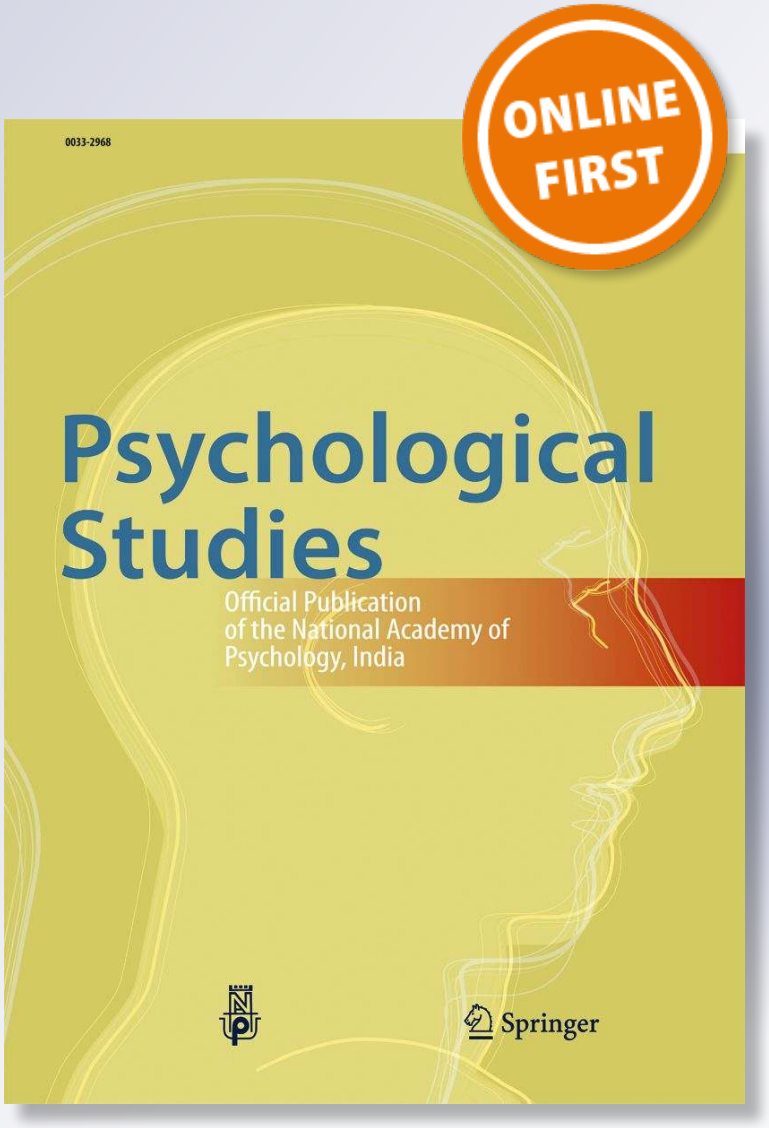
Psychological Studies

ISSN 0033-2968

Psychol Stud
DOI 10.1007/s12646-017-0421-y



Springer

Psychol Stud
DOI 10.1007/s12646-017-0421-y

REVIEW ARTICLE

Positive Psychology Interventions for Chronic Physical Illnesses: A Systematic Review

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Received: 26 October 2016 / Accepted: 1 September 2017

Abstract Positive health focuses on enhancing health along with curing illness to bring about well-being. Treatment for physical illness generally involves drug therapy, while the psycho-social aspects, specifically the positive psychology perspectives, are largely ignored; nevertheless, a growing number of investigations are now studying the effects of positive psychology interventions on health outcomes. The objective of this paper is to systematically review positive psychology interventions in chronic physical illness. A literature search through the databases of EBSCO, PubMed and PsycINFO, reference lists of significant papers and grey literature was conducted following four criteria set for this review. The number of studies selected finally that acceded to the criteria was 14. These studies were analysed by focusing on the study characteristics, kinds of intervention and outcomes of positive psychology interventions. Overall findings reveal that different intervention programmes have been devised by combining various exercises, writing is the most commonly used method for administration and positive psychology interventions are considered feasible and acceptable by patients, but findings about their usefulness are inconclusive. Suggestions for future research, clinical practice and application in communities have been provided which may be useful for clinicians, practitioners and caregivers.

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Keywords Positive psychology · Positive psychology intervention(s) · Chronic physical illness · Positive health · Physical health

Psychology has traditionally followed a deficit based or pathological approach that studies symptoms, thereby focusing on what is wrong with individuals. In contrast, positive psychology (PP) emphasizes on what is right with them. Accordingly, it follows the complete process of helping individuals move not only from the negative end of the mental health continuum to a zero that represents the absence of symptoms, but also from the zero towards the positive end. In other words, PP is a comprehensive approach towards mental health that aims to enhance optimal functioning. Although the roots of the PP movement can be traced to the humanistic approach, this area has become popular after Seligman's 1998 (as cited in Seligman & Csikszentmihalyi, 2000) presidential speech of the American Psychological Association, which officially marks the beginning of the PP movement. Since then, the discipline has branched out in various directions including health.

The WHO (2006) acknowledges in its Constitution that health is more than just the absence of illness. Therefore, simply trying to fix what is wrong to cure illness should not be expected to lead to overall well-being. A need was thus realized to move on to a strength-based model to leverage what is good in a person, which in turn would improve well-being. Seligman (2008) affirms that positive health defines such a state and predicts increased life expectancy, better quality of life, decreased health costs and better mental health in ageing or better prognosis for any illness. Additionally, Ryff and Singer (2000) posit that positive health encompasses various aspects of *flourishing*, which

Published online: 19 September 2017

can be understood by studying its physiological underpinnings in the neural circuits, endocrine and immunological systems that ultimately lead to vitality and longevity. Positive psychology interventions (PPIs) are approaches that introduce people to various methods of harnessing their inner strengths or social support factors while looking at the brighter side of situations. Meyers, Woerkom and Bakker (2013) describe PPI as any intentional activity or method such as training and coaching based on (a) the cultivation of valued subjective experiences, (b) the building of positive individual traits or (c) the building of civic virtue and positive institutions.

According to a recent report, chronic diseases are an overlooked cause of poverty and hinder the economic growth of developing countries (WHO, 2005). For instance, it is the leading cause of death in a developing country like India (Patel et al., 2011). Chronic diseases are irreversible and may only be managed but not cured, generally lasting throughout life.

Impact of Chronic Physical Illness on Mental Health of the Patients

Having to deal with physical health issues over long periods of time often comes at psychological costs. The prevalence of mental disorders is significantly higher in patients with chronic physical diseases and more so, for individuals with three or more physical illnesses (Härter et al., 2007). Individuals and their caregivers may experience fear, anger, depression, and disorientation that affect their competence and productivity levels (Dubey, 2010). For example, a global diabetes community describes depression to be the most common psychiatric disorder that has comorbidity with diabetes ("Diabetes and depression," n.d.). Chronic illness and depression move in a vicious cycle, wherein disability due to illness causes depression, and depression in turn hinders treatment ("Coping with chronic illness and depression," 2017). Negative emotional reactions to the diagnosis of a chronic physical illness may range from stoicism to denial and may generally result in behavioural outcomes such as unwillingness to get treatment which adds to the difficulty in dealing with the situation. Strauss, Spitzer and Muskin (1990) posit that denial of the physical disease may become pathological causing further mental health issues. Work in the area of coping and chronic illness has so far been focused on the stress produced by chronic illness being buffered or moderated by coping strategies (Dubey, 2010). However, more studies are required to understand how positive emotions can impact chronic health conditions by enhancing well-being—an approach that is not covered by the deficit-based approach. In this regard, it may be mentioned that interventions that build positive states also alleviate depression (Seligman, Rashid, & Parks, 2006; Seligman, Steen, Park, & Peterson, 2005). A positive outlook not only leads to better prognosis and longevity among coronary heart disease (CHD) patients (Giltay, Geleijnse, Zitman, Hoekstra, & Schouten, 2004), but positive psychological well-being also leads to reduced risk of CHD (Boehm, Peterson, Kivimaki, & Kubzansky, 2011). In fact, Peterson, Park, and Seligman (2006) predict that deliberate interventions for enhancing character strengths will lead to benefits for people suffering from illness. Majani (2011) agrees that mechanisms to adapt to chronic illness can be understood through PP. On the other hand, Coyne, Tennen, and Ranchor (2010) assert that PPI studies do not lead to as many positive consequences as is claimed in patients suffering from cancer.

Following such contradiction coupled with the absence of sufficient evidence about this growing field of inquiry, a need was felt to summarize the findings of the available studies to get a better understanding of the topic. Thus, the aim of this paper is to systematically review all investigations that have been conducted after the beginning of the PP movement on PPIs among patients suffering from chronic physical illnesses. This analysis will provide the scientific community with an understanding of the health conditions that have been covered, the PP exercises that have been used and the interventions that have reported favourable outcomes. Accordingly, implications and directions for future research will be suggested. Consequently, this review is expected to be beneficial for both physicians and mental health professionals in development of holistic programmes that cater to both physical and mental health leading to better prognosis.

In view of the above aim, a systematic review was considered to be the most suitable method of analysis for this review. Ridley (2012) describes a systematic review as a complete research study in itself with its own research questions using available literature as data. The data are coded and analysed for synthesis of conclusions from the literature in the form of a summary from the cumulative data. This process allows researchers to draw conclusions from the evidence obtained by the use of their tacit knowledge by reflecting on the trends observed in the data from past learning, past insight, past experience and past reflection (Ridley, 2012). The only systematic review that was found in the area of chronic disease and PPI was on patients diagnosed with breast cancer by Casellas-Grau, Font, and Vives (2014). The current review has more specific criteria and covers more diseases. The findings from this systematic review may be particularly useful in understanding the future course of actions that need to be taken in applying PPIs in chronic disease management.

Methodology

Major databases of EBSCO, PubMed and PsycINFO were searched with the keywords *positive psychology intervention, chronic diseases* in combination with other words one by one. These search words are presented in Table 1. Donaldson, Dollwet, and Rao's (2014) suggestion for including only those researches that clearly indicate studying positive psychology variables and have been conducted after 1998 was followed. In view of this aim, four criteria were devised for this review. Accordingly, papers that fulfil all the following requirements were selected for the final analysis:

(a) Peer-reviewed papers studying PPI and chronic physical illness.
(b) Studies that linked the findings to PP literature.
(c) Investigations that were conducted since the year 1998, which marks the beginning of the PP movement.
(d) Papers written in English (Fig. 1).

Papers with inadequate description about methodology were rejected; for example, those that did not cite the tools used were excluded from the final analysis. The snowballing technique (Ridley, 2012) of going through the references section of relevant articles to identify other researches was used. The search of grey literature through Google and Google Scholar by using the keywords mentioned in Table 1 led to other articles or thesis works that were relevant but not indexed under any of the major databases. This was performed in accordance with Ridley's (2012) suggestion that it helps to cover more research which would contribute to a wider understanding of studies in the area of positive health interventions. It is for this same reason that review and theoretical papers were considered important to be included here, as these generally focus on many types of interventions and/or samples. Instead, empirical papers focus only on the specific intervention and sample attempted in that investigation. Additionally, in order to scan the relevance of the articles and verify their connection to PP, the names of prominent PP researchers including Seligman, Lyubomirsky and Diener were used as keywords further. Literature between the years 1998 and September 2016 was included. The keywords used are presented in Table 1.

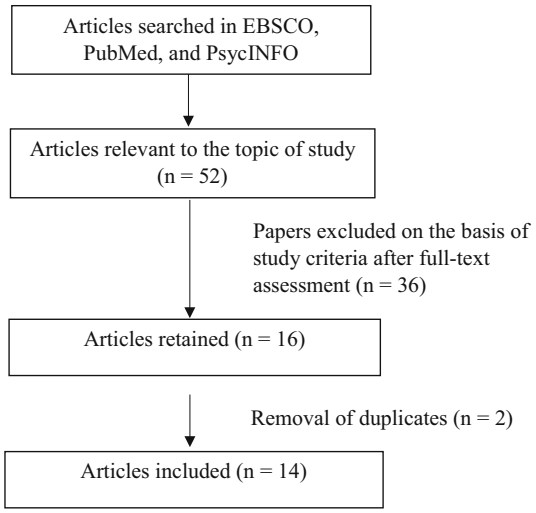

Fig. 1 Flow chart depicting the process of selection of papers for final analysis

Results and Discussion

The number of studies selected finally that acceded to the criteria was 14. This systematic review has discussed less number of studies as compared to the other reviews cited in this paper. Since the criteria for the present study are different from previous studies, all studies mentioned in the earlier reviews did not fit the criteria for this review. Subsequently, the conclusions drawn from this systematic review were different from those arrived at by the other reviews. Moreover, Frisch's (2013) work was specific to quality-of-life therapy and coaching (QOLTC), whereas Casellas-Grau et al. (2014) focussed on specific interventions and therapies while also calling for better classification of PP therapies. But this review supports DuBois et al.'s (2012) comment that there is very little empirical evidence; more interventions both cross sectional and longitudinal are needed to understand whether PPIs have a significant effect in improving the health of patients

Table 1 Search words used

	And	Or
Step I: while searching titles and abstracts in journals	Positive psychology intervention, chronic disease(s), intervention, positive psychology	Research, study, happiness, positive health, salutogenesis, well-being, CHD, diabetes, HIV
Step II: while searching in text	Positive psychology intervention, chronic disease(s), intervention, positive psychology, positive health, salutogenesis	Happiness, well-being, positive affect, positive emotions, life satisfaction, subjective well-being, psychological well-being, Seligman, Lyubomirsky, Diener, Emmons, Deci, Ryan

suffering from chronic diseases. These 14 studies were analysed with focus on the factors of study characteristics, kinds of intervention and outcomes of PPI.

Study Characteristics

Preliminary investigation of the studies revealed differences in sample characteristics including age, gender and disease diagnosis among others and tools used. Many studies did not include the category of age, stage of disease and time elapsed after diagnosis. In most studies, the age range covered was broad, sometimes ranging from young adults to elderly participants. No studies were reported on children, while only one was conducted on adolescents, which also happened to be the youngest target population among all the studies in this review. It is important to note that this is the only study which also involved others in the intervention process, in this case the adolescent's parents (Jaser, Patel, Linsky, & Whittemore, 2014). The search uncovered three theoretical papers and 11 on practice-oriented research. Two review articles, one on cardiac populations (DuBois et al., 2012) and another on QOLTC (Frisch, 2013), along with one systematic review which was the only gender-specific study on women on breast cancer patients (Casellas-Grau et al., 2014), were found. Longitudinal investigations using randomized control lasting up to a few weeks were found to be popular among the studies located. However, the kind of time investment required in such cases including the duration of the follow-up procedure may have been a contributor to subject loss—a trend that was reported by eight of the 14 studies reviewed. Four studies did not perform follow-up studies after post-test. Most investigations were found to have employed control and experimental groups.

This search revealed that the chronic physical illnesses on which PPIs have been conducted so far include three studies on cancer, two on type 2 diabetes, one on type 1 diabetes, two on cardiac diseases, two on HIV, one on brain injury, one on chronic pain, spinal cord injury (SCI), multiple sclerosis (MS), neuromuscular disease (NMD) and post-polio syndrome (PPS). Three of the eight empirical studies had phone-based methods of instruction, while two were web-based. The remaining studies had interventions being administered directly by trainers. Most studies did not report information about socio-economic, employment, hospitalization and marital status, religion and ethnicity. Only one paper (Huffman et al., 2011) specifically mentions hospitalization of patients studied, and one (Jaser et al., 2014) provides information about the presence of a caregiver (parent), ethnicity, family income and marital status of parent(s). The studies reviewed were found to be conducted by researchers spread across Iran, Switzerland, UK and USA. These studies used different kinds of measures, and hence, it was not possible to distinctly identify tools that were used most frequently. However in comparison with other measures, the Positive and Negative Affect Scale (Watson, Clark, & Tellegen, 1988), Center for Epidemiologic Studies–Depression Scale (CES-D, Radloff, 1977) and Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985) appear more frequently than others among the nine empirical studies, in the trend of four, three and two, respectively. For instance, these questionnaires were used to study the effect of PPI on those diagnosed with chronic physical pain, neuromuscular disease and multiple sclerosis (Müller et al., 2016) as well as brain injury survivors (Andrewes, Walker, & O'Neill, 2014). The use of a wide variety of tools being used in these studies may be attributed to the fact that researchers in the area are still experimenting with different possibilities within this relatively new field of investigation.

Kinds of Interventions

This analysis also attempted to examine the kinds of interventions that were administered to those diagnosed with chronic physical illness. Most researchers have designed interventions focusing mostly on the character strengths of gratitude and kindness; however, they have assigned different names to the exercises. For example, acts of kindness, kindness and altruistic behaviours are all exercises that study the character strength of kindness. Furthermore, these exercises have been used in combination with other forms of support such as telephonic counselling and e-mail reminders. While the duration of these interventions varied from one to 12 weeks, follow-up information was not reported in one case as the study was still ongoing. Interventions consisted of activities which may be grouped under the categories below.

Identification of Strengths

Character strengths are measurable positive traits which can be portrayed in thoughts, feelings and behaviours and varies among people (Park, Peterson, & Seligman, 2004). The link between character strengths and positive outcomes is well established by past research. This evidence has been used in devising PPIs for those diagnosed with chronic illnesses as well. Investigations that have used exercises to facilitate self-identification of strengths for the purpose of goal setting and achieving among other aims have been reported (Moskowitz et al., 2012, 2014). In the Moskowitz et al.'s (2014) design, the facilitators would also report the strengths they thought the participant possessed. These strengths and how the participant expressed them in behaviour that day were to be listed every day to be able to identify goals for the coming week. Similarly,

Cohn, Pietrucha, Saslow, Hult, & Moskowitz (2014), in their pilot study, asked participants to maintain a daily strengths journal to acknowledge strengths even when they feel bad about themselves. This was paired with goal selection and working towards achieving it. Andrewes et al. (2014) also helped participants to identify their five key character strengths using the Brief Strengths Test and then to engage in an activity that promotes the expression of any one strength of their choice. Huffman, DuBois, Millstein, Celano, and Wexler (2015) administered a brief assessment of personal strengths and instructed the participants to use one identified strength in the following week. Peterson and Seligman's (2004) Values in Action classification is a well-known psychometric test that is used to identify character strengths of individuals. It was found that the character strengths such as gratitude, kindness and forgiveness have generally received more attention than others and have also been used in PPIs with chronic physical illnesses as discussed below.

Acknowledging the Positives

Human beings have the tendency to focus on negative events in the environment, which according to evolutionary psychologists helped them to survive catastrophic events in the past. Seligman (2011) refers to this as the *ice age barrier*. This tendency to ignore the positives and focus only on the negatives (Seligman, 2008) continues to dominate our thinking even during present times. This natural bent towards negative selectivity bias can be changed if individuals deliberately try to focus on the positive aspects in life. Sadness is common after a diagnosis of chronic physical illness along with the thoughts of disability, poor prognosis and impending death among other negative scenarios associated with it. But the change in perspective from looking at these negative aspects of the disease to identifying what is going right and focusing on them may be described as practicing *positive selectivity*. It is a widely proven fact that the mind has a strong ability to influence physical health; this information can be used by chronic disease management professionals to improve health care (Purdy, 2013). Researchers have reported that optimism leads to improved physical health (DuBois et al., 2012; Rasmussen, Scheier, & Greenhouse, 2009; Tindle et al., 2009). This is true to the extent that even a false promise of recovery might have beneficial outcomes. Taylor, Kemeny, Reed, Bower, and Gruenewald (2000) comment that even a false sense of optimism, meaning and control referred to as positive illusion enhances mental health and is also good for physical health. Brydona, Walker, Wawrzyniak, Chart, and Steptoe (2009) explain this by suggesting that optimism may be considered protective as it counteracts stress-induced increases in inflammation and boosts the adjuvant effects of acute stress. Most studies revealed in this systematic review took advantage of the concept of positive selectivity bias, to conduct interventions. These attempts revealed that people can be trained to acknowledge positive things or events by just thinking or writing about them.

Moskowitz et al. (2014) point out that it is positive affect that is at the core of building resilience and helps in psychological coping for people diagnosed with serious illnesses. Such "mechanisms may help to explain why people with 'a generalized tendency to look on the bright side of things' live a longer and healthier life" (Brydona et al., 2009, p. 815). Therefore, it is important to build more interventions that focus on prevention and build protective factors to develop resilience in order to improve health of patients diagnosed with chronic illness (Cal, Sa, Glustak, & Santiago, 2015). Moskowitz et al. (2012) asked HIV patients to focus on positive aspects in life by noticing a positive event, discussing their emotions and reactions to it and capitalizing on it. Huffman et al. (2015) instructed participants to "experience and savour the positive emotion" while recalling a good event. Acknowledging the positives can be done through writing which has been explained below.

Positive Writing

The term *positive writing* in this paper encompasses the exercises of *three good things (three blessings), gratitude letter, best possible selves* and *benefit finding*. The three blessings exercise involves writing about at least three good things that have occurred throughout the day/week and made the individual happy. These could be very small incidences like a friendly hello from a co-worker or a major event like recovery from a serious illness like cancer. The practice of gratitude letter involves writing a note expressing thankfulness to any person whom we have never thanked before (family, friends, acquaintances or even strangers) who have influenced or benefitted the participants in a positive way. Sometimes, participants are asked to read these letters to the individual being thanked, in person. Other modifications of this exercise include expressing thankfulness on a random day or a special day and over telephone. In the best possible selves exercise, participants are instructed to write about the ideal person that they want to be in future in different areas of life. In a variation of this exercise, people are asked to maintain a best possible selves diary. Yet another version of positive writing requires participants to write about their perception of positive outcomes in the aftermath of major negative events, referred commonly to as benefit finding. While writing has been used in many psychology interventions routinely, the upsurge of the PP movement has led to an

increase in awareness, specifically about its use in the context of positive outcomes. PPI researchers have used this technique extensively in their work. Lyubomirsky (2008) explains that writing about events or ideas helps to articulate them and provides a more concrete structure to thoughts. Nath and Pradhan (2011) through their model explain that, when we write about positive aspects of a negative situation or the good things that have happened, or our best possible selves or life goals, there is an increase in positive emotions that lead to psychological resilience and improved physical health. In other words, positive writing can be considered to be cathartic or therapeutic in nature. A major finding that emerged from this review was that all studies that involved gratitude exercises instructed participants to write about what they felt grateful for, except the study by Fallah, Golzari, Dastani, and Akbari (2011) where participants were interestingly asked to define gratitude. On the surface, merely defining gratitude appears to be a simple exercise but in fact involves cognitive functions of thinking, perception and metacognition that ensures in-depth processing and in all likelihood, an intense experience that is expected to result in acknowledgement and understanding of the positive factors in one's life. This may help to explain the recent findings that expressive writing interventions led to increases in well-being including decrease in somatic complaints though the effect size is small (Travagin, Margola, & Revenson, 2015). Other investigations employing this technique included those conducted by Huffman et al. (2011) and Müller et al. (2016) in which the gratitude exercise was used to increase optimism levels of cardiac and SCI, MS, NMD and PPS patients, respectively. Huffman et al. (2011) instructed participants suffering from acute cardiovascular disorder to write about three good things that had taken place over the week for 8 weeks, despite the existence of negative situations, such as medical events. Patients were also asked to think about why the event took place and how the situation had made them feel at that point of time. In Andrewes et al.'s (2014) study, brain injury patients wrote about three good things that happened each day after their rehabilitation session, while Huffman et al. (2015) instructed type 2 diabetics to think about three favourable events over the past week. Similarly, participants in Moskowitz et al. (2012, 2014) asked participants to maintain a gratitude journal by writing at least one positive thing that took place throughout the day for 5 weeks. Jaser et al. (2014) used worksheets in which adolescent diabetics wrote what they felt grateful for and positive self-affirmations related to what they were proud of in themselves. Parents were also instructed to provide them praise through verbal or text messages which acted as positive affirmational support. In a similar attempt, Cohn et al. (2014) used both gratitude journal and daily positive events journal. A gratitude journal was also employed in Müller et al.'s (2016) study where participants chose to perform the gratitude exercise 54% of the times among other exercises provided, indicating their preference for it. Likewise, Moskowitz et al. (2012) found that noting positive events was most frequently practiced by the participants of their study. Other investigations by Huffman et al. (2011, 2015) employed the gratitude letter which participants wrote to thank someone for their kindness. Additionally, Huffman et al. (2011) asked participants to note how they felt during and after completion of this exercise, write what their ideal lives would be like in 5 years and the acts of kindness that they performed. These exercises are useful as they provide a concrete goal to be reached, as well as an understanding of the magnitude of what has already been achieved. This is reflected in Dubey and Agarwal's (2004) findings that a perceived sense of control and future orientation provided patients suffering from chronic illness with a positive outlook by enabling them to find meaning in their lives. An attempt towards benefit finding was utilized by Moskowitz et al. (2012, 2014) in which HIV positive participants reported a relatively minor stressor each day. They then listed ways in which the event can be looked at positively so as to change their emotional reaction to it. Thus, participants were encouraged to look at the good things they learnt from the experience, for instance facing challenges can make us aware of our strengths. Similarly, Cohn et al. (2014) employed a daily reappraisal journal where participants were taught to counter excessive negative interpretations of events. Other studies that have used exercises like the three blessings, gratitude letter, benefit finding and others for improving well-being have been presented in a comprehensive review by DuBois et al. (2012).

Mindfulness and Spiritual Interventions

Though mindfulness and spirituality are separate streams of study, they are often studied under the ambit of PP. Both involve focusing on thoughts, being aware of our surroundings and our body. Hamilton, Kitzman, and Guyotte (2006) propose mindfulness as the missing link between *cognitive behavioural therapy* (CBT) and PP as they both aim to change the experience of life by transforming thoughts. By developing attention regulatory skills and focusing it on everyday life goals as opposed to pain and discomfort, patients with chronic illness can maintain a normal level of functioning. The researchers add that interventions such as mindfulness-based stress reduction (MBSR) can change metacognitions about emotions and lead to a detached acceptance of the chronic condition, as well as reduce dwelling on unpleasant negative emotions rather than the distraction method used in CBT. Mindfulness intervention allows participants to practice it in two

forms daily (Moskowitz et al., 2012, 2014). One is guided (formal) and is carried out by focusing on one's breath and allows focus on the present moment, accepting and acknowledging it without getting caught up in emotional reactions or ruminative thoughts about the situation, and another that is focused on daily activities like conversations on phone. The second form is informal where participants are asked to think about daily activities that they rush through and compare it with a positive event that they may have experienced. Cohn et al. (2014) utilized both formal and informal mindfulness practice in their investigation. Mindfulness can help in development and acceptance of a positive image about oneself and the chronic illness that patients have to live with. This is revealed through the findings obtained in Fallah et al.'s (2011) psycho-spiritual intervention conducted on a sample of Iranian women diagnosed with breast cancer. It included among others, contemplation and meditation, prayer, defining and applying trust in God, learning patience and repentance and atonement. This intervention was effective in increasing hope, happiness and life satisfaction among these women to a significant degree. Such interventions are useful as they may change the patient's perception about their bodies and illnesses as well as reduce pain.

Acts of Kindness

Simply witnessing or even hearing about benevolent acts increases the desire to perform good deeds (Algoe and Haidt, 2009). The *acts of kindness* intervention was employed to increase positive affect among HIV positive patients (Moskowitz et al., 2012, 2014) and among cardiac patients (Huffman et al., 2011). Fallah et al. (2011) in their study acquainted the participants with the Islamic perspective on altruism outlining how they can be sensitive to other people's needs and help them. Müller et al. (2016) used exercises on kindness such as performing good deeds for other people who could be friends or strangers, either directly or anonymously, either spontaneously or in a planned manner. Participants indicated their preference for this exercise by selecting this option 83% of the times over other exercises. Huffman et al. (2015) allow participants to complete a series of activities that can either enhance immediate mood or are very meaningful. They were also asked to perform at least three acts of kindness in a day with the specific aim of being benevolent towards another. Similarly, Cohn et al. (2014) asked participants to maintain a daily kindness journal and to help someone else out even when the participant is under stress or socially isolated as that would lead to individual and relationship benefits. Malin (2003, as cited in Lyubomirsky, 2008) posits that acts of kindness interventions add a sense of meaningfulness and value to one's life. Individuals work to help others instead of ruminating about one's own troubles.

Forgiveness

It has been observed that although PPI researchers have incorporated forgiveness exercises in their studies, they have not provided a comprehensive definition for the concept or even outlined its probable positive and negative effects for the participants. In other words, the definition and decision of forgiveness were largely left to the participants' personal interpretation. Fallah et al. (2011) in their intervention helped breast cancer survivors to be able to define forgiveness according to the "abstractions of spirituality and religiosity", instructed them in the process of forgiving and made them understand its importance in the "worldly and otherworldly" (p. 143) space. Eaton (2012) reported that forgiveness indirectly increases quality of life and even has an accumulation effect over time, especially in patients suffering from arthritis. Müller et al. (2016) encouraged participants to let go of anger and resentment towards others and use writing as a way to release anger and express resentment. However, this exercise was chosen by only 7% of the participants. Since only two studies with widely different techniques for forgiveness exercises have been found, in which one defines the concept (Fallah et al., 2011) and the other involves writing (Müller et al., 2016), no general conclusion can be derived about the effectiveness of using a forgiveness intervention.

Apart from the exercises discussed under the above headings, Müller et al. (2016) also devised a PPI based on other concepts. *Savouring*, which refers to enjoying or taking pleasure in the present moment while it is taking place instead of hurrying through it, was chosen by participants 50% of the times. On the other hand, *flow*, which involves engaging in activities that are completely absorbing and provides happiness through this engagement, was chosen 48% of the time. Other options available to the participants included exercises with the percentages in brackets representing the percentage of times it was chosen. These were taking care of their body (39%), spirituality (35%), relationships (33%), goals (28%) and optimism (24%).

Most of the exercises mentioned above were used in different combinations and with varying frequencies and methods of administration. For example, Moskowitz et al. (2014) recommend a "phone evaluation" technique for feedback and evaluation of the intervention and to plan further courses of action. This is supported by Huffman et al. (2015), who believe that patients exhibit their preference for a phone-based intervention as it is more personal. An important factor which can have a positive impact on the outcome is allowing participants to choose exercises as these would correspond to their preferences and provide them with greater freedom of choice leading to

more engagement with the task. Some studies reviewed provided participants the option of selecting exercises they wanted to engage in. For instance, patients in Huffman et al.'s (2015) study could choose between exercises that bring immediate boosts in mood or those that are more deeply meaningful versus recalling successful events. Investigations by Huffman et al. (2011, 2015) let participants choose the exercise they like and then repeat it. Müller et al. (2016) provided participants with preliminary information about all exercises from which they could select any four.

The outcomes of the interventions summarized so far have been discussed below.

Outcomes of PPI

In analysing the outcomes of PPI, it was found that researchers mostly reported psychological outcomes such as increases in positive affect and decrease in negative affect. Only one study reported improvement in physical health, that is, chronic pain (Müller et al., 2016). Explanations for the outcomes listed in Table 2 will be discussed here. The outcomes are being discussed according to the diseases dealt with so as to highlight the important findings with regard to each group of disease.

From PPI studies targeted at patients suffering from type 2 diabetes, Cohn et al. (2014) and Huffman et al. (2015) both report feasibility of the PPIs, but the former found significant increase in positive-affect-related variables and significant decrease in negative-affect-related variables, while there were no significant findings by the latter. Similarly, Jaser et al. (2014) found that PPIs were acceptable for patients of type 1 diabetes but did not arrive at any significant results.

Of the three studies in the analysis that focused on cancer, Coyne et al. (2010) declared on the basis of their review that no significant improvement in the health of cancer patients was found. This did not receive support from two other studies which focused on specifically breast cancer (Casellas-Grau et al., 2014; Fallah et al., 2011). While the first is a systematic review, the other administers a spiritual PPI intervention; both conclude that PPIs are able to enhance positive aspects in breast cancer patients. Furthermore, Fallah et al.'s (2011) study also reports significant outcomes as depicted in Table 2. Another group of PPIs were found to include cardiac patients. Both the reviews by Dubios et al. (2012) and the PPI by Huffman et al. (2011) conclude that these interventions lead to improved outcomes. The latter reports no significant findings, while Dubios et al. (2012) recommend more studies. Other studies such as Andrewes et al. (2014) on brain injury patients report increases in happiness and self-concept though not significant. Patients with SCI, MS, NMD or PPS and chronic pain have reported significant increases in life satisfaction and positive affect while declaring that the intervention is a feasible and a web-based attempt is acceptable (Müller et al., 2016). It may be specifically pointed out that this is the only study in our analysis that has reported significant decrease in physical symptoms as well.

Frish's (2013) review on lung and kidney transplant patients and Hamilton et al. (2006) report an improvement among patients. Additionally, Hamilton et al. (2006) state that mindfulness changes our perception towards chronic illness.

In summary, four studies, that is, Andrewes et al. (2014), Huffman et al. (2015), (2011) and Jaser et al. (2014) reported insignificant findings. An equal number of studies reported significant findings. These were Cohn et al. (2014), Fallah et al. (2011), Moskowitz et al. (2012), Müller et al. (2016) among the eight empirical studies.

Therefore, it may be concluded that there is no strong statistical evidence in to support the effectiveness of PPIs among patients with chronic physical diseases. At the same time on the basis of improved outcomes from some studies, decline in negative affect variables, recommendations by the PPI administrators and participants' positive feedback as well as conclusions drawn from three (Casellas-Grau et al., 2014; Dubios et al., 2012; Frisch, 2013) review studies, it may be determined that this area can prove to be beneficial for chronic disease management.

Implications and Future Directions

The major implications and the future directions have been based on the limitations encountered in this study. These are discussed under economic and cultural differences, areas needing more investigation, implications for clinical practice, implications for differences in age and effects of coexisting factors including hospitalization and stage of disease among others. Considering the fact that PPIs have generally been rated as feasible and acceptable by patients suffering from chronic diseases as derived from our systematic review, further researches need to focus on specific factors.

Areas which have received little or no attention need to be considered as priority areas by future researchers. For example, no PPI targeting health has been made in the organizational set-up. Individuals in organizations have to deal with enormous amount of stress due to their work load, deadlines and other factors such as problems with supervisors, co-workers, pay and promotions. Moreover, the changing time has led to developments in technology and people today are heavily dependent upon computers and the internet, leading to a sedentary lifestyle.

Table 2 Studies examining the effect of PPI on chronic physical illness

S. no.	Author and date	Chronic health condition	Sample description (*N*, age, gender, geographical area)	Groups	Attrition	Kind of intervention (activities/ exercises) (schedule of administration given if available)	Measures	Intervention duration	Outcome	Follow-up
1	Andrewes et al. (2014)	Brain injury	$N = 10$; concurrent weekly individual therapy sessions for substance misuse; some participants on psychiatric medication; no substance use records after brain injury, no access to drugs; all Caucasian; all hospitalized	PP group = 5 Control group = 5	1 dropped out	Three positive things in life Signature strengths intervention	1. Hospital Anxiety and Depression Scale (HADS) 2. Authentic Happiness Index 3. Head Injury Semantic Differential Scale II 4. Brief Strengths Test	12 weeks	Non-significant: Improvement in self-concept, happiness and reduction in polarization of the self in the present, future and past in the second intervention; anecdotal evidence revealed a clear improved mood following the interventions	–
2	Casellas-Grau, Font & Vives (2014)	Breast cancer	16 studies in the systematic review	[a]	[a]	QOL therapy, mindfulness, PTG therapy, strength-centred therapies, developing strengths, meaning-making, enhancing positive emotions, engagement, positive relationships, accomplishments, life satisfaction and personal growth and change	[a]	[a]	Positive interventions in patients and survivors of breast cancer promote positive aspects	[a]
3	Cohn et al. (2014)	Type 2 diabetes	$N = 49$; California	DAHLIA course group Emotion-reporting wait-list control group	22%	Online intervention Week 1: Positive events Noticing positive events and savouring Daily positive events journal Daily gratitude journal (written in all weeks) Week 2: Mindfulness Formal and Informal mindfulness Mindfully doing an activity Breathing exercises	1. CES-D scale 2. Perceived Stress Scale 3. Differential Emotions Scale 4. Confidence in Diabetes Self-Care scale 5. Self-Care scale 6. Diabetes Distress Scale 7. Three health behaviour questions	5 weeks	Significant: decrease in depression and reduced perceived stress of DAHLIA participants than controls; increase in positive affect; reduced negative affect effect; Effects stronger in intervention participants recruited online than those recruited in person; feasibility and efficacy proven	After 7 days (feedback only, no follow-up assessment)

Table 2 continued

S. no.	Author and date	Chronic health condition	Sample description (*N*, age, gender, geographical area)	Groups	Attrition	Kind of intervention (activities/exercises) (schedule of administration given if available)	Measures	Intervention duration	Outcome	Follow-up
						Week 3: Reappraisal Applying Positive reappraisal and understanding the role of negative cognitions Daily reappraisal journal Week 4: Strengths and Goals Daily strengths journal Select a goal for the week and record progress daily Week 5: Acts of Kindness Daily kindness journal				
4	Coyne et al. (2010)	Cancer	Review study	[a]	[a]	[a]	[a]	[a]	PP in cancer care does not have much empirical support	[a]
5	DuBois et al. (2012)	Cardiac problems	Review study of which two were intervention studies	[a]	[a]	[a]	[a]	[a]	Positive attributes lead to improved cardiac outcomes; PPIs can increase positive states; more intervention studies are needed	[a]
6	Fallah et al. (2011)	Breast cancer	$N = 50$ (25 in each); age: 30–65 years; gender: women (breast cancer survivors); stages I, II, or III; no metastatic lesion at least 8 months after diagnosis; termination of acute treatment period such as surgery, chemotherapy and radiation therapy	Control group present	5 dropped from each group	Forgiveness: Defining the concept, instructing its process and effects Gratitude: Defining the concept in Islamic view; paying attention to positive aspects of negative situations and thanking for it, instructing different ways of gratitude Altruistic services: Defining the concept in Islamic perspective, increasing sensitivity understanding needs and ways to help others	1. Ghobari-e-bonab and colleagues 's spiritual experience 2. Snyder's hope Scale 3. The Oxford Happiness 4. Life satisfaction questionnaire 5. General Health Questionnaire 28	8 weeks: 1.5 h per session once a week	Significant: increase in hope, happiness and life satisfaction	–
7	Frisch (2013)	Lungs and kidney disorder	Review study	[a]	[a]	QOLTC	[a]	[a]	Increase in quality of life, mood disturbance and social intimacy in lung patients awaiting a transplant seen till 3 months after treatment; higher life satisfaction for kidney patients	[a]

Table 2 continued

S. no.	Author and date	Chronic health condition	Sample description (*N*, age, gender, geographical area)	Groups	Attrition	Kind of intervention (activities/exercises) (schedule of administration given if available)	Measures	Intervention duration	Outcome	Follow-up
8	Hamilton et al. (2006)	Chronic diseases (general)	Theoretical	[a]	[a]	Mindfulness meditation (yoga, MBSR)	[a]	[a]	Mindfulness meditation enhances certain cognitive functions (attention regulation, detachment) that can change the perception about the chronic illness and help in focusing on daily life goals rather than the illness	[a]
9	Huffman et al. (2011)	Acute cardiovascular disease or decompensated heart failure	$N = 23$ Hospitalized patients	PPI group ($n = 9$); Active control group ($n = 7$; relational response group: used meditation); Attentional control ($n = 7$; relational response group: recall and list events)	12%	Phone-based intervention Weeks 1 and 2: Gratitude: Three Good Things Gratitude Letter Weeks 3 and 4: Optimism and Best Possible Self With regard to social network With regard to mental and physical health Weeks 5 and 6: Kindness: Perform three kind acts within a single day Weeks 7 and 8: Choice - choose and complete exercises done previously	1. CES-D 2. Subjective Happiness Scale 3. HADS Anxiety subscale 4. Medical Outcomes Study Short-Form 12 Mental Component Score	8 weeks	Non-significant: improvement in optimism, depressive symptoms, anxiety, happiness and health-related quality of life for PP group relative to the subjects in the other two groups; magnitude of differences greatest between PP and recollection conditions; none of the differences statistically significant due to very small sample size in this pilot study; feasibility, acceptability and utility of the PPI in cardiac patients established; developed intervention and treatment manuals; PP participants reported the exercises easy to complete and globally useful	–

Table 2 continued

S. no.	Author and date	Chronic health condition	Sample description (*N*, age, gender, geographical area)	Groups	Attrition	Kind of intervention (activities/exercises) (schedule of administration given if available)	Measures	Intervention duration	Outcome	Follow-up
10	Huffman et al. (2015)	Type 2 diabetes	$N = 15$ (9 females) Mean age: 60.1 ± 8.8 years, English-speaking adult patients who had type 2 diabetes meeting American Diabetes Association criteria, suboptimal adherence score < 15/18 on Medical Outcomes Study Specific Adherence Scale (MOS SAS), had access to telephone and had no cognitive impairment	Theoretical and single-arm proof-of-concept study	(7 completed at least 3 exercises, 6 still undergoing procedures)	Phone-based intervention Phone sessions: 15–30 min. Week 1: Introduction to Intervention, one exercise completed with interventionist Gratitude for Positive Events Week 2: Using Personal Strengths Week 3: Gratitude Letter Week 4: Enjoyable and Meaningful Activities Week 6: Recalling Past Success—writing about it, positive emotions and their contribution to it Weeks 8 and 10: Participant's Choice: Repeating an Exercise—complete an exercise they liked previously Performing Acts of Kindness—if they want to perform a new exercise Weeks 2–4: Participant independently completes exercise weekly, phone sessions take place Weeks 6–10: Biweekly exercises and phone sessions Week 12: review previous exercise and plan future course of action	1. Life Orientation Test–Revised (LOT–R) 2. GQ-6 3. HADS 4. Diabetes Distress Scale 5. Patient-Reported Outcomes Measurement Information 6. System 10-Item Scale 7. Summary of Diabetes Self-Care Activities Measure 8. MOS SAS (items were also repeated at 6 and 12 weeks)	12 weeks; will be completed weekly for the first 4 weeks and then biweekly over the next 8 weeks	Non-conclusive findings about PPIs increasing PP states and health behaviours; established: feasibility of enrolment of participants for proof-of-concept study in out-patient and in-patient settings; treatment and trainers' manuals successfully developed and staff successfully trained; proposed a theoretical framework which identifies five potential mediators of positive affect that lead to health behaviours and use of motivational interviewing techniques and phone sessions for administration	–

Table 2 continued

S. no.	Author and date	Chronic health condition	Sample description (*N*, age, gender, geographical area)	Groups	Attrition	Kind of intervention (activities/exercises) (schedule of administration given if available)	Measures	Intervention duration	Outcome	Follow-up
11	Jaser et al. (2014)	Type 1 diabetes	$N = 40$ Age: 13–17 years; Diagnosed with type 1 diabetes for at least 6 months; inclusion of parents/guardians in intervention	Positive affect group; Education group	5%	Phone-based intervention Gratitude: identifying what makes them happy; Positive affirmations (both self and from parents) Getting gifts for completing exercises Phone calls to remind them to complete exercises twice a week; E-mail used only to send educational material	Filled every two weeks included questions from: 1. Self-Care Inventory 2. PANAS Parents provided demographic data on: age, race/ethnicity, marital status, annual family income, child age and gender and date of diagnosis	8 weeks	Non-significant: improvement in mood and/or stress level, which is favourably influenced the family environment; acceptability established but feasibility not established; exercises completed only when reminded.	At 3 and 6 months
12	Moskowitz et al. (2012)	HIV	$N = 11$ (2 females) Age: 18 and above Mean age = 38 Included if informed about being HIV positive for the first time in the previous 4 months; San Francisco	Control group not present; No-treatment historical comparison group present	2 dropped out	Week 1: Skill 1: Noticing positive events Skill 2: Amplifying/ Capitalizing: included thinking back on the event, reliving it and continuing to focus on it Skill 3: Gratitude exercise Week 2: Skill 4: Mindfulness (Formal and Informal) Week 3: Skill 5: Positive reappraisal Week 4: Skill 6: Focusing on Personal Strengths Skill 7: Creating attainable goals Week 5: Acts of Kindness Includes home practice	1. Modified version of the Differential Emotions Scale 2. Five-Factor Mindfulness Scale	5 weeks; One on one session; Each session = 45–60 min.	Significant: increase in positive affect and decrease in negative affect; Non-significant: increase in mindfulness score; Most frequently practiced skill: noting positive events, averaging 2–3 times per week; Least frequently practiced skill: informal mindfulness, at just under once per week; Facilitators, staff, and investigators also experienced increases in positive affect; Feasibility and acceptability with participants established; High participant retention and adherence to home practice	At 1 week (in-person session) and 5 weeks (via phone) after intervention

Table 2 continued

S. no.	Author and date	Chronic health condition	Sample description (*N*, age, gender, geographical area)	Groups	Attrition	Kind of intervention (activities/exercises) (schedule of administration given if available)	Measures	Intervention duration	Outcome	Follow-up
13	Moskowitz et al. (2014)	HIV positive	Adults, diagnosed within past 12 weeks	Control group present (attention-matched)	–	Focusing on positive events, Maintaining a gratitude attitude, Mindfulness exercises (Formal and Informal), Positive reappraisal, Personals strengths, Goals Setting, Achieving goals, Acts of Kindness, Phone evaluation Includes home practice	1. Modified Differential Emotions Scale 2. PANAS 3. Daily affect diary 4. PRIME-MD 5. CES-D 6. Spielberger State–Trait Anxiety Inventory 7. Perceived Stress Scale 8. Physical symptoms by AIDS Clinical Trials Group 9. CD4 and viral load 10. Sexual risk behaviours 11. Alcohol/drug use 12. Medication adherence 13. Health attitudes and behaviours checklist 14. Ways of Coping Scale 15. Multidimensional social support inventory 16. NEO Five-Factor Inventory 17. LOT–R 18. Rosenberg Self-Esteem Scale 19. World Assumptions Scale 20. Subjective socio-economic status	Designed the PPI	To be done till 1 year after baseline assessment	

Table 2 continued

S. no.	Author and date	Chronic health condition	Sample description (*N*, age, gender, geographical area)	Groups	Attrition	Kind of intervention (activities/ exercises) (schedule of administration given if available)	Measures	Intervention duration	Outcome	Follow-up
								21. Hassles and Uplifts Scale 22. Life Experiences Survey 23. GQ–6 24. Five-Factor Mindfulness Scale 25. Coping Self-Efficacy Scale	5 weeks; Introduce a new exercise each week while continuing the already introduced ones	
14	Müller et al. (2016)	SCI, MS, NMD, PPS and chronic pain	$N = 400$ 100 per diagnostic group—SCI, MS, NMD, and PPS Age: 18 and above; Mean age = 59.4 years Participants were mostly non-Hispanic white (96%); Average pain intensity in the past week of ≥4 on a 10-point scale on at least half the days of past four weeks	Control group present	Post-treatment: 20%; follow-up: 10%	Online intervention Kindness: Being kind towards others and performing kind acts, Gratitude: Counting blessing and writing a gratitude letter, Relationships strengthening and enjoying relationships by making time for people, expressing admiration, appreciation, etc. Optimism: Writing about best possible future selves, goals and sub-goals, identifying barriers and pessimistic thoughts, forming ideas to minimize their effects Weekly prompts given by sending a standardized e-mail using a tracking system	1. Personal Well-being Index—Adult version 2. PANAS 3. HADS-D 4. Numeric Rating Scale 5. Pain Interference Scale 6. Survey of Pain Attitudes 7. Chronic Pain Acceptance Questionnaire—Short version 8. Pain Catastrophizing Scale	8 weeks	Significant: increase in life satisfaction, positive affect and pain control; decrease in depressive symptoms, pain intensity, pain interference and pain catastrophizing, maintained even at follow-up; Participants showed personal preference for the exercises of: Kindness (83%), Gratitude (54%), Savouring (50%) and Flow (48%); Feasibility and acceptability of web-based program established	At 2.5 months

"–" data not reported. Some information has not been reported as it was not available in the original articles. Full forms of some abbreviations have been reported in the text and have therefore not been repeated in the table

[a] To denote not applicable for a study

Consequently, they spend less time with their friends and family and more time with material things that further increase their stress levels. Family life, performance at work and health are likely to be hampered. Thus, there appears to be a dire need to introduce a PPI in a stressful environment such as an organizational setting. Such interventions could be customized in accordance with the setting. For example, computer or mobile applications can be popularized through recommendations by doctors, and researchers could work on developing low-cost facilities that can be availed by more people. Few applications that use PP techniques such as Happier, Live Happy, and My Mood Tracker already exist. Additionally, applications like Glucose Buddy, Kidney Diet, WebMD Pain Coach help in management of few chronic diseases. But to the best of our knowledge, PPI applications that assist in managing chronic physical illnesses have not yet been made available. Hence, it is important to device applications for such specific conditions, such as an application can be made for diabetics which remind them to take insulin injections at intervals while guiding them through a PPI simultaneously. This would help to deal with the stress of the chronic condition by pairing of a negative thought with a positive one which are incompatible (from CBT). Future researchers can devise pain management applications using PPI which would work both on the physical and psychological aspects of pain.

On the clinical front, depression is a common outcome and also a comorbid condition with chronic physical diseases as gleaned from the studies included in this review. It may be suggested that PPI can be used to deal with depression. This suggestion finds support in Sin and Lyubomirsky's (2009) study that PPI significantly decreases the symptoms of depression. In treating physical illness, the focus is generally on eliminating physical symptoms; in doing so, the psychological effects of the disease are frequently ignored. This is not to say that treating physical symptoms is not important, but rather that the mental health aspect should be incorporated into the treatment programme as well. Introducing these patients to PPI can decrease the likelihood of other comorbid psychiatric conditions. PPI can also be considered as preventive interventions. While dealing with medical conditions especially chronic diseases, if PPI is administered along with allopathic and other psychological interventions, it can lead to building of positive resources. These may include relying on strengths, focusing more on the good things in life and finding meaning. So far, from the above analysis, it can be seen that this has been attempted by training patients in positive selectivity bias, with gratitude exercises being most popular. But there can be patients, who do not have either gratitude, kindness or forgiveness as any of the top five strengths. They thus do not benefit from these due to lack of person–activity fit. Patients should also have the freedom to choose which exercises they want to perform; this is also one of the ways of ensuring a person–activity fit. The authors suggest that the participants should also be asked whether they prefer a text message or a phone call. PPI on other strengths of character which can be expected to have an effect on a chronic disease condition like hope, love, perseverance, zest and humour among others need to be devised. For example, hospital clowns creating humour in children's hospitals. Researchers in constructing or using PPI must also specify the rationale behind using a particular exercise for the readers to better understand its significance and link it to the problem that is being tackled. For example, the three blessings exercise works well for depression as it reminds individuals to notice good things in their life situations.

Age-related diversity among children, youth and geriatric population needs to be studied separately by future researchers. For example, it would be important to focus on the younger population in a country like India which has a high youth population and on the geriatric population in the developed country of Japan which has a very high population of senior citizens. Child care for children being born with HIV and for those with early-onset diabetes would benefit from positive psychology research in this area. A novel attempt studied the effects of granting a wish intervention on children with serious illnesses including cancer (Chaves, Vázquez & Hervás, 2015) which appears to be operating on pleasant life principles. The intervention not only impacted psychological aspects such as increase in positive emotions, satisfaction with life and personal strengths, but also reduction in nausea, a physical symptom. It is observed that deaths due to chronic diseases occur at much younger ages in low- and middle-income countries (WHO, 2014). PPI administration among children can be a challenging area of work but maybe made more interesting by imbibing components from play therapy to ensure more active participation. O'Donnel (2013) administered a brief strength-based intervention for older adults with physical disabilities which included exercises of savouring, active constructive responding, gratitude and strengths among others. Though there was no significant improvement in pain experience, a definite improvement in mental health scores was obtained. In the light of scanty research, future researches would need to devise and test various interventions on different populations as some PPIs might work with children while others with an older population. Finally, it is recommended that researchers endeavour to report as many defining characteristics such as the Cronbach's alpha for the population, the presence of follow-up and hospitalization among others, the absence of which limits comparisons with other samples and

understanding the effectiveness of PPIs as in the case of this review.

There is a need to look at the effect of hospitalization, stage of the disease, the presence of a caregiver and/or living with family and socio-economic status on health outcomes for patients. The authors agree with Huffman et al. (2011) that hospitalization is a period when patients are open to change in behavioural practices to maintain health and try out new interventions. Moreover, hospitalization as opposed to living at home would have a very different impact on the psychological well-being of the patient, considering that the social and medical support at both these places is different. PPI needs to be tested for its effect on the patients' physical health through adherence to medication. All stages from beginning and continuance of medication to their cooperation with the medical staff by moving on from a stage of denial to acceptance and active involvement in treatment need investigation. PPI also needs to be tested for its effect on psychological health of the patient, including but not limited to a sense of meaning and purpose in life, reduction in other psychological symptoms and active utilization of resources to cope in life even when disadvantages of the chronic condition exist. Moreover, facilities for choosing psychotherapeutic PPI at hospitals by patients should be present wherever it can be afforded. Policies for the presence of trained therapists who can in turn train caregivers and patients need to be made and implemented. The interventionist can review the exercises to be completed, discuss ways to apply these to everyday life, take the patients through the next exercises to be performed and promote its continuance even after the intervention is over, as attempted by Huffman et al. (2015). Through this review, a gap that has been identified is the lack of substantial longitudinal studies, over a long period (up to a year), which might be due to factors of seriousness or terminality of the condition which effect the patient's participation in the study. But in such cases the caregivers could also benefit from being involved in such PPIs. So far this has been attempted in only one study by Huffman et al. (2015).

All of the above can only be achieved if governments treat health care as a priority area for investment. Specifically in the area of PPI in chronic physical diseases, if the outcomes of medical research are supported by findings from behavioural research catering to psychological needs, it can lead to improvements in many areas that will eventually benefit not only individuals but communities and nations as well. This applies mostly to developing nations as reflected in WHO's (2005) comment that "investment in chronic disease prevention programmes is essential for many low- and middle-income countries struggling to reduce poverty" (p. 61). Variables like the socio-economic status of the patient and the absence of free for all medical facilities affect the reach of treatment. Moreover, the literacy level of patients who are administered a particular treatment plays a significant role for a positive prognosis. PPI and its effects are therefore required to be tested more rigorously with specific focus on the demands of developing nations. In many developing nations such as India, PPI administration for chronic physical illness still lacks widespread popularity. This may be attributed to the fact that the PP movement is relatively new for such countries and also that it is largely driven by Western ideologies. The cultural difference between the West and the East makes it difficult to directly transfer the established interventions, which have shown significant positive results to diverse cultural settings. These differences need to be explored. The suggestions provided here need to be incorporated into a theoretical model so that they might be tested. Furthermore, they may be incorporated into practices and policies for better mental health, and thereby better prognosis and life expectancy may be achieved, resulting in higher returns for the country.

Since work in this area is burgeoning, a systematic review like this can help to devise better methodology for future researches. We agree with Bolier et al. (2013) and follow a stricter selection pattern for inclusion of studies thus not including studies from related areas of hope therapy, life review therapy or mindfulness if the study does not specifically mention the word PP. Though this approach may be criticized, the authors believe this is necessary to understand whether PPIs really make a significant difference to the health of chronically ill patients. Through this review, a gap that has been identified is the lack of substantial longitudinal studies, which can study the effect of the intervention over months and years. This systematic review can be used to take decisions for policies and professional practice for a wider range of chronic diseases.

Conclusion

Since this systematic review has been conducted while work in this area is at a nascent stage, the usefulness of PPIs for chronic physical illness was not established. But some patterns that can definitely be observed include interest among researchers to conduct PPIs in the context of physical health and their acceptability and feasibility as reported by patients suffering from chronic diseases. However, the findings presented are not very conclusive due to small number of studies and too many PPI techniques. This review found that the studies available have used different intervention programmes devised by combining various exercises. Positive writing interventions, especially gratitude exercises, are most popular as they are

easily administered. Other intervention exercises including but not limited to forgiveness, mindfulness, savouring and relationships are needed. Interventions on little investigated character strengths of hope, perseverance, love and others should be made and their effects studied. A nomenclature for different PPI techniques would perhaps be too binding, but there is a need to have some form of structure about which techniques may or may not be considered a PPI. PPI can work well with chronic diseases where depression is experienced as a comorbid condition. Studies that also consider the effects of hospitalization, socio-economic status, stage of disease, the presence of caregiver (including marital status) and longitudinal studies lasting up to a year are needed. Depending on the time that participants are willing to invest, participants should be asked about their preference of follow-up, and whether telephonic, internet based or personal visit based is feasible before the intervention is administered. To understand which PPI works best in which population, the effects of age, gender, and cultural factors should be studied. Mobile applications that help in dealing with chronic diseases need to be popularized, specifically among professionals who have limited time to spare from their work. WHO (2005) points out that the "chronic disease pandemic" needs to be recognized, understood and acted on urgently. The Robert Wood Johnson Foundation in collaboration with University of Pennsylvania has already taken a step towards researching physical health benefits that can be reaped from administration of PPIs. From the above discussion, it may be concluded that more research is needed in these areas. This review has been able to throw light on the current state in the area of PPI administration for chronic physical diseases. In some more years, another review would be required to have more evidence for practitioners and policy makers. For now, which interventions work cannot be pointed on the basis of limited research except that focusing or writing about positive aspects of life seems to help people that is understood through subjective accounts of their experiences. In order to fill these gaps, the primary objective should be to conduct more research in this area which becomes challenging not only because of the multitude of chronic disease conditions that are present but also due to individual differences in personality, age and its unique interaction with their particular culture. But there is a need to build a global culture where medical systems incorporate PPIs in their treatment programme to cater to mental health needs as well. This will lead to the building of positive institutions and civic virtues, which is one of the major defining features of PPI and an aim of PP. In summary, it may be stated that this area is a promising direction in health and well-being promotion.

Acknowledgements The authors would like to thank researchers for sharing their publications via e-mail communication. The current work has been undertaken by the funding provided by Indian Council of Medical Research for Senior Research Fellowship.

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