Quality of Life and Spirituality in Indian University Students

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Compliance with Ethical Standards:

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Abstract

Purpose: University students can experience low levels of quality of life (QoL). Previous research has indicated a positive relationship between spirituality and QoL. The objective of this study was to examine the association between QoL and spirituality in Indian post-graduate university students. It was hypothesised that higher levels of QoL would be associated with higher levels of spiritual beliefs, spiritual practices, sense of purpose/connectedness and sense of hope/control after adjusting for a range of demographic variables and perceived social support.

Methods: A group of 475 post-graduate university students (241 males and 234 females) from Pondicherry, India, participated in this cross-sectional study. Data was collected by using demographics, as well as the World Health Organisation's QoL-BREF Questionnaire and the Spirituality Attitude Inventory.

Results: The results indicated that religiosity was not associated with QoL in this sample. However existential wellbeing was independently associated with Physical Health QoL, Psychological QoL, and Environmental QoL; while a sense of hope/control was independently associated with Physical Health QoL, Social QoL and Environmental QoL. Negative religious coping had the strongest association with all of the measures of QoL.

Conclusions: These results provide evidence that higher levels of spirituality are associated with higher levels of QoL in Indian university students. The findings of the study support the need for further interventional studies examining the promotion of spirituality in Indian university students in order to improve their QoL.

Keywords: Spirituality, Religiosity, Quality of Life, University Students

University students throughout the world can experience low levels of Quality of Life (QoL). For example, Swedish university students have been shown to have lower levels of QoL than their working counterparts (Vaez, de Leon, & Laflamme 2006). Similar findings have been found among Brazilian medical students (Lins, Carvalho, Menezes, Porto-Silva, Damasceno 2015). Other studies have found levels of QoL comparable to community norms, with notable exceptions in specific domains. For example, American university students studying pharmacy have shown a lower QoL in the domain of mental health (Marshall, Allison, Nykamp, & Lanke 2008), which is consistent with medical and dental students in Saudi Arabia (Aboalshamat, Hou, & Strodl 2014) and Germany (Burger, Neumann, Ropohl, Paulsen, & Scholz, 2016) having high levels of depression, anxiety and stress. In contrast, Serbian university students (Pekmezovic, Popovic, Tepavcevic, Gazibara, & Paunic 2011) and Canadian university students (Raj, Simpson, Hopman, & Singer 2000) report lower perceptions of general health on measures of QoL than population norms. While university students' QoL tends to be lower than community norms, the evidence suggests specific deficits in QoL are likely to be culturally defined. To the best of our knowledge, so far, no studies to date have examined the factors associated with multiple domains of QoL in Indian university students.

One important cultural factor that has been shown to be associated with QoL is spirituality (Sawatzky, Ratner, & Chiu 2005). The association between spirituality and QoL has also been investigated in university students. Using one of the World Health Organization 's (WHO) measures of QoL (the WHOQOL-BREF), religiosity/spirituality has been shown to be associated with psychological quality of life in adolescents (Mirghafourvand, Charandabi, Sharajabad, & Sanaati, 2016) and both domestic and international university students (Deb, McGirr, & Sun, 2016; Hsien-Chuan Hsu, Krägeloh, Shepherd, & Billington 2009), and with

social quality of life in international students (Hsien-Chuan Hsu, Krägeloh, Shepherd, & Billington 2009). Spirituality is a complex, multidimensional construct (Pesut, Fowler, Taylor, Reimer   Kirkham, & Sawatzky 2008). An important consideration when examining spirituality is the overlapping construct of religiosity (Krägeloh, Henning, Billington, & Hawken, 2015; Pargament, 1999). Individuals can be spiritual without being religious; therefore assessing both religiosity and spirituality is vital for mapping the full spirituality/religiosity (S/R) domain in the present study. While it is common that spirituality is a stronger predictor of QoL or wellbeing, it is common to measure both due to cultural differences. For example, Lau, Hui, Lam, Lau, and Cheung (2015) found that spirituality rather than religion was a predictor of QoL in Chinese university students over a 3 year period. Similarly spirituality, but not necessarily religiosity, is associated with adolescents' well-being in Zambia (Holder, Coleman, Krupa, & Krupa, 2016). However religiosity has also been found to be associated with university student QOL in American college students (Anye, Gallien, Bian, & Moulton, 2013) and New Zealand medical students (Henning, Krägeloh, Thompson, Sisley, Doherty, & Hawken, 2015). Given that religiosity and spirituality are both multidimensional and specific relationships between these constructs and QoL vary across cultures, it is common practice to include measures of both in studies examining QoL in young people. As such measures of both religiosity and spirituality will be include in this study.

In an attempt to conceptualise spirituality using a scientific methodology, Gijsberts and colleagues, conducted a systematic review of questionnaires of spirituality, identifying a number of key constructs (Gijsberts, Echteld, van der Steen, Muller, Otten, Ribbe, & Deliens 2011). Their model proposed the domains of spirituality of Spiritual Well-Being (e.g., peace), Spiritual Cognitive Behavioral Context (spiritual beliefs, spiritual activities, and spiritual relationships), as

well as Spiritual Coping. Recognising that spirituality is a multi-domain construct, these domains were incorporated into the present study, in addition to the separate construct of religiosity. A component of spiritual well-being called existential well-being has been associated with psychological well-being (as measured by depressive symptoms and self-esteem) in American college students across different faiths (Genia, 2001). Negative religious coping is a construct that measures a tenuous relationship with God during stressful event (i.e. a spiritual belief that God has abandoned you or will punish you). In contrast, positive religious coping is a construct that measures a secure relationship with God during stressful events. There is evidence that negative religious coping is associated with poorer mental health and life satisfaction, while there may be no association between positive religious coping and wellbeing (Hebert, Zdaniuk, Schulz, & Scheier 2009). However another study found that negative religious coping was related to QoL in domestic Muslim university students, while positive religious coping was associated with QoL in international Muslim university students (Gardner, Krägeloh, & Henning, 2014). Given the more consistent findings for negative religious coping, this construct was included in the current study along with religiosity, existential wellbeing and QoL.

The present study assessed religiosity and spirituality using a battery of published questionnaires collated in the Spiritual Attitudes Inventory. The questionnaires measure constructs such as beliefs about the importance of religion using the Duke University Religion Index (Koenig & Büssing 2010); spiritual coping using the Negative Religious Coping (Pargament, Smith, B. Koenig, & Perez 1998); a sense of spiritual purpose and connection using the Existential Well-Being Scale (EWBS) (Paloutzian & Ellison 1982); and sense of hope and control as measured using the Multiple Health Locus of Control Scale (Wallston, Wallston, & DeVellis 1978).

Multiple demographic factors have also been found to be associated with university students' QoL, including gender, family income, smoking status, discipline studying at university, whether living at home or alone, and level of physical activity (Pekmezovic, et al. 2011). In addition, there is evidence of associations between social support and spirituality (Salsman, Brown, Brechting, & Carlson 2005). Therefore this study also included a range of demographics and social support as possible covariates for the association between spirituality and QoL.

While religion and ethnic/national cultures may often be inseparable, culture can have a moderating impact upon the expression of religious/spiritual beliefs upon various psychological and health outcomes (Saroglou & Cohen 2013). As such it is important that the associations between measures of spirituality and QoL in university students be examined cross-culturally. Given that there is a paucity of research exploring these associations in Indian populations, the aim of this study was to investigate the association between multiple measures of spirituality and QoL in a sample of Indian university students after controlling for a range of demographic variables and levels of social support. It was hypothesised that higher levels of spirituality, as measured by all questionnaires included in the Spiritual Attitudes Inventory, would be associated with all measures of QoL after controlling for a range of demographics and social support.

Methods

Participants

Six hundred post-graduate students from different educational streams at Pondicherry University were approached for this research. The students were either in their 4th and 5th year of an integrated program (i.e. undergraduate and postgraduate coursed integrated into the one

course) or were master's degree students who had completed an undergraduate degree. Out of

600 approached, 534 students (i.e., 89%) agreed to participate in the study. After eliminating

cases due to missing data, data analysis was conducted with the remaining 475 participants (241

males and 234 females). There were no differences on demographics between those with and

without missing data. The age ranged from ranged from 20 to 27 with a mean of 22.13 years

(SD=1.47 years). The majority of the participants considered themselves Hindu (78.1%), while

the remaining sample described themselves as Christian (11.6%), Muslim (7.4%) or other

(2.9%). See Table 1 for details on the demographics of this sample.

INSERT TABLE 1 ABOUT HERE

Measures

Demographics. The participants were asked to provide demographic data on age, gender,

education, discipline studying at university, religion, place of origin of birth in India, marital

status, family income per month, family type (living with family of origin or also with extended

family), and whether or not they had experienced a severe crisis in the past (such as death of

family member or close friend, financial crisis and breakup of intimate relationships). The

options for responses to these questions are shown in Table 1 below.

Social Support. The participants were asked to complete study specific questions on their

perceived level of support from their family environment (i.e. perceived support from entire

family), university environment, parents, teachers and classmates. Participants rated these areas

of social support on a three point scale: highly supportive, moderately supportive and not so

supportive.

Spirituality Attitude Inventory.

The Spiritual Attitude Inventory (SAI) is a battery of existing questionnaires collated by the US Army's Centre for Health Promotion and Preventive Medicine (USACHPPM). The 28-item SAI was compiled by combining four currently validated measures of religion and spirituality to address the following areas:

- Duke University Religion Index (DUREL) developed by Koenig, George, & Peterson (1998) is a 5-item measure of religiosity and the importance of religion in one's life. Two items are rated on a 5 point scale and three items are rated on a 6 point scale. Higher scores indicate higher levels of religiosity or spiritual practice. It is a widely used measure of religiosity (Koenig & Büssing 2010) and has been shown to have good test-retest reliability (Storch, Strawser, & Storch 2004), and good convergent validity with other established measures of religiosity as well as a stable factor structure (Koenig & Büssing 2010; Storch, Roberti, et al. 2004) The Cronbach alpha for this study was .79.

- Negative Religious Coping (NRCOPE) developed by Pargament, Smith, Koenig, & Perez (1998) is a 7-item measure of spiritual belief. These items are scored on a 6 point Likert scale. Higher scores indicate lower levels of negative religious coping or beliefs about a tenuous relationship with God. This measure has shown good construct validity, predictive validity, and incremental validity, in particular, is a robust predictor of health-related outcomes (Pargament, Feuille, & Burdzy 2011). The Cronbach Alpha for this study was .76.

- Existential Well-Being Scale (EWBS) [a subscale of the Spiritual Well Being Scale (SWBS)] developed by Paloutzian & Ellison (1982) is a 10-item measure of 'sense of purpose/connection'. Test-retest reliability ranges from $r=0.73$ to 0.99. These items are scored on a 4 point Likert scale. Higher scores indicate greater existential well-being.

The EWBS has been shown to have a stable factor structure with good internal consistency in university students with different religious affiliations (Genia 2001). The Cronbach alpha for this study was .83.

- Internal/external subscale of the Multidimensional Health Locus of Control Scale (MHLC) developed by Wallston, Wallston, and DeVellis (1978) is a 6-item measure of '*sense of hope/control*'. Test retests stability coefficients range from 0.60 to 0.70. These items are scored on a 6 point Likert scale. Higher levels indicate greater internal locus of control/hope regarding one's health. Whist there is ample evidence for the reliability and validity of the MHLC in western populations (Wallston 2005), there is also some evidence of a stable factor structure and good concurrent validity in non-western countries (Moshki & Ashtarian 2010). The Cronbach alpha in this study was .82.

WHO Quality of Life-BREF (WHOQOL-BREF).

The WHOQOL-BREF questionnaire comprises 26 items, which measure the following broad domains: physical health, psychological health, social relationships, and environment WHOQoL Group (1998). Item four was taken out from the subscale of Physical Health QoL as it was negatively correlated with other items in the same scale in this sample. The Physical Health QoL subscale comprised of six items and had a Cronbach alpha of .70 in this study. The Psychological QoL subscale was composed of six items and had an internal reliability of .75 in this study. The Social QoL subscale involved three items and had a Cronbach alpha of .63 in this study. The low Cronbach alpha represents the fact that only two items were included in this subscale. The Environment QoL subscale was made up of eight items and had a Cronbach alpha of .79 in this study. Finally the Total QoL scale involved 24

items and had an internal consistency of .91 in this study. The scale's single item ratings of overall perceived QoL and overall perceived health were not included in the analyses of this study. The WHOQOL-BREF has been shown to have good internal consistency reliability, discriminant validity, criterion-related validity and construct validity in Asian university students (Li, Kay, & Nokkaew 2009).

Procedure

Ethical approval was granted by the Institutional Ethics Committee of the Pondicherry University. The university departments that were involved in the study were selected to achieve equal representation from the Faculties of Science and Arts. Departments were approached for permission to collect data. Postgraduate students from the selected departments were invited to learn more about the study either individually or in groups, and were then briefed on the purpose of the study. The participants completed hard copy versions of the questionnaires and then returned these to the research assistant either individually or in group format outside lecture periods. Participants were informed that participation was voluntary and that they could withdraw from the study at any time without penalty or comment. The de-identified data was entered into a database by a research assistant who was blind to the identity of the participants.

Statistical Analyses

Because of the multiple comparisons included in this study, alpha was set at .01 in order to minimise the chance of Type 1 errors. To facilitate inclusion in the bivariate correlations, the following dichotomous variables were dummy coded: gender, education, family type, and crisis. Only covariates with significant bivariate correlations with the different domains of QoL were included in the relevant hierarchical regressions. Similarly only the measures of spirituality that

had significant bivariate correlations with the different domains of QoL were included in the relevant hierarchical regressions. The hierarchical regressions included the covariates as step 1 and then included the measures of spirituality as step 2 with measures of QoL as the dependent variables.

Results

Descriptive Statistics

The means and standard deviations for the measures of QoL are shown in Table 2 below. Each subscale was moderately correlated with each other and strongly correlated with the overall total score of the WHOQOL-BREF.

<div align="center">INSERT TABLE 2 ABOUT HERE</div>

The means and standard deviations for the measures of spirituality are shown in Table 3 below. Spiritual practice (DUREL) was positively correlated with Spiritual belief (NRCOPE) but has no relationship with sense of purpose or connection (EWBS) or sense of hope or control (MHLC). NRCOPE, EWBS and MHLC scores were all positively correlated, however the size of the correlations were all small indicating that the four measures of spirituality used in this study tend to measure quite distinct aspects of spirituality in this population.

There were no significant differences between the categories of discipline studied with levels of QoL-Physical, QoL-Psychological, QoL-Social, QoL-Environment and QoL-Total ($F_{(2, 472)}$ = 0.55, 0.48, 1.46, 0.76 and 0.33 respectively). Similarly, there were no significant differences between the categories of place of origin born with levels of QoL-Physical, QoL-Psychological, QoL-Social, QoL-Environment and QoL-Total ($F_{(4, 470)}$ = 0.95, 1.92, 2.56, 2.08 and 2.26 respectively). Note that while the difference in QoL-Soc for Place of Origin was less

than p <.05, due to correction for the large number of comparisons, it was not considered statistically significant as *p* was not less than 0.01. In addition, there were no significant differences between the categories of marital status with levels of QoL-Physical, QoL-Psychological, QoL-Social, QoL-Environment and QoL-Total ($F_{(2, 472)}$ = 1.62, 1.36, 1.43 and 1.45 respectively). Finally, there were no significant differences between the categories of religion with levels of QoL-Physical, QoL-Psychological, QoL-Social, QoL-Environment and QoL-Total ($F_{(3, 471)}$ = 1.69, 2.93, 1.06, 2.10 and 2.62 respectively). Again, while the difference in QoL-Psychological for Relig-on was less than p <.05, due to correction for the large number of comparisons, it was not considered statistically significant as *p* was not less than 0.01.

INSERT TABLE 3 ABOUT HERE

Covariates

The bivariate correlations between the possible covariates and the QoL measures are shown in Table 4 below. There were no significant associations between any of the QoL measures and Gender, Education, Family Type, Crisis and Age (with the exception of an association between Age and Qol-Social). Family Support, University Support, Parental Support and Classroom Support were included as covariates for all of the hierarchical regressions using the quality of life measures as dependent variables. In addition, Family Income was included as a covariate for the hierarchical regression using QoL-Environment as a dependent variable.

INSERT TABLE 4 ABOUT HERE

Spirituality and Quality of Life

The correlation coefficients between spirituality scores and QoL scores are presented in Table 5. Among scores of four spirituality domains (i.e., religiosity (DUREL), negative religious coping (NRCOPE), sense of purpose or connection (EWBS) and sense of hope or control (MHLC), the score of NRCOPE domain showed the strongest correlations with QoL scores. Given that all of the measures of spirituality were correlated with all of the QoL scores, all of the spirituality measures were included in the hierarchical regression analyses.

INSERT TABLE 5 ABOUT HERE

The relationships between spirituality and QoL were further examined in hierarchical regression analyses (see Table 6). After controlling for the relevant covariates, negative religious coping, existential well-being and health locus of control were all independently associated with physical health QoL, environmental QoL and the total score on the QoL measure. Of the significant independent variables, negative religious coping had the strongest association. Religiosity was independently unrelated to any of the measures of QoL. With regards to psychological quality of life, after adjusting for covariates, only negative religious coping and existential well-being were related. Religiosity and health locus of control were not significantly associated with psychological QoL. After controlling for the relevant covariates, only negative religious coping and health locus of control were independently associated with social QoL with again negative religious coping having the strongest relationship.

INSERT TABLE 6 ABOUT HERE

Discussion

The present study aimed to assess the QoL of Indian post-graduate university students and its association with their spirituality after adjusting for a range of demographic and perceived social support variables. The results of the study indicate that spirituality is independently associated with QoL in this population. The measure of spirituality that had the strongest association with QoL was negative religious coping. This aspect of spirituality was associated with all measures of QoL and consistently had the strongest associations out of any of the independent variables. Existential well-being and hope/health locus of control had similar strengths of association with QoL although slightly different patterns of association. Existential well-being was independently associated with all of the measures of QoL with the exception of social QoL, while health locus of control was independently associated with all measures of QoL with the exception of psychological QoL.

The results of this study are consistent with other similar studies. The finding that negative religious coping is associated with QoL is consistent with studies using other populations (Gardner, Krägeloh, & Henning, 2014; Tarakeshwar, Vanderwerker, Paulk, Pearce, Kasl, & Prigerson 2006) and findings from a meta-analysis (Ano & Vasconcelles 2005). The finding that existential well-being was associated with QoL, including psychological QoL, corresponds with the results from Jafari and colleagues (Jafari, Farajzadegan, Zamani, Bahrami, Emami, & Loghmani 2013), who also found a significant relationship between existential well-being and mental health in university students. While our study appears to be the first to examine the link between a sense of hope/health locus of control and QoL in university students, others have found associations between hope and QoL in other populations (Hasson-Ohayon, Kravetz, Meir, & Rozencwaig 2009; Krägeloh, et al, 2015) and more specifically associations between the MHLC and QoL in other populations (Kostka & Jachimowicz 2010).   While previous studies

have shown an association between spirituality and QoL in university students, there is evidence that the relationship between subjective perceptions of well-being and spirituality may be culturally bound (Lun & Bond 2013).

The finding that lower family income was related to lower QoL scores in several domains and in overall total score of QoL was consistent with the findings of previous studies (Dolan, Peasgood, & White 2008; Ma & McGhee 2013; Ng, Hakimi, Byass, Wilopo, & Wall 2010). The finding of no relationship between gender and QoL has also been demonstrated in previous studies (Mercier, Peladeau, &Tempier 1998; Lau et al., 2015). The strong associations between various areas of social support and different measures of QoL is consistent with what has been found in a number of other studies (Chen, et al. 2013; Gabriel, & Bowling 2004; Ibrahim, et al. 2013).

However there are also some differences in findings in this study compared with other studies. For instance, religiosity was not independently associated with QoL in Indian university students in this study. However, religiosity has previously been associated with QoL in Muslim undergraduate students living in Kuwait (Abdel-Khalek 2010). Given that approximately 78% of this sample reported being of the Hindu faith and only approximately 7% reported being of the Muslim faith, it is possible that this difference may represent a difference in the religion of the two samples and requires further investigation in future studies. The finding that having experienced a crisis was not associated with QoL is different from other studies that have shown that past trauma and recent severe stressful events are associated with worse health related QOL (Leserman, Whetten, Lowe, Stangl, Swartz, &Thielman 2005). It is possible that this is attributable to differences in the measurement of this construct.

Limitations

This study has a number of limitations that need to be considered when interpreting the findings. First the cross-sectional design precludes considerations of causality. Second the participants in this study were in their fourth and fifth year of university studies. It is possible that different results may have been obtained in undergraduate students in their first, second or third year of study. Similarly, the participants tended to be young, unmarried and Hindu. It is therefore possible that different results may be found in a different Indian university population. These findings therefore need to be replicated using a longitudinal design that includes Indian university students with a broader range of demographics.

Another limitation relates to the inclusion of the measure of health locus of control. While Koenig (2009) included this as part of his battery in the Spiritual Attitudes Inventory as a measure of sense of hope/control, and health locus of control has been associated with religiosity (Ai, Peterson, Rodgers, & Tice 2005), the constructs of hope and locus of control are not interchangeable (Carifio & Rhodes 2002). Moreover, Koenig (2008) cautions against equating measures of positive psychology with measures of spirituality. As such caution is needed when interpreting the findings of health locus of control in terms of a measure of spirituality.

A final limitation relates to the generalisability of the findings from this study. A comparison across 114 countries found that religiosity declined with economic and social development (Deb, McGirr, & Sun, 2016), income security, and health security (Barber 2013). Indeed there is even some evidence that the strength of religious/spiritual beliefs varies within subcultures in India with those living in Bangalore having slightly stronger religious beliefs than those living in Pondicherry (WHOQoL SRPB Group 2006). As such there are strong cultural factors influencing the intensity of religious/spiritual beliefs. Given that the degree to which a culture values religiosity influences the psychological benefits of religious/spiritual beliefs

(Gebauer, Sedikides, & Neberich 2012), it is uncertain as to the degree to which the associations found in this study may generalise to other countries and cultures with differing material security and cultural beliefs. Further research is therefore required to replicate these findings in other cultures, including examining whether the same associations with QoL are found in Indian postgraduate university students studying abroad.

Implications

The results of this study support negative religious coping, existential well-being and health locus of control as targets for screening and intervention in order to improve the QoL in Indian university students. In particular, reducing students' negative religious coping (i.e. beliefs of being abandoned or punished by God) is likely to have the biggest effect in improving QoL in Indian university students compared with targeting any other variable measured in this study. The associations need to be confirmed in prospective and interventional studies.

Based upon the findings with Psychology –QoL, student counselling services and mental health providers should explore negative religious coping or beliefs about a tenuous relationship with God, as well as existential wellbeing when counselling with Indian post-graduate university students for psychological problems. This is consistent with emerging evidence that incorporating discussions about religion/spirituality in cognitive behaviour therapy for anxiety and depression can enhance its effect upon those who are religious (Paukert, Phillips, Cully, Loboprabhu, Lomax, & Stanley 2009) as well as evidence of a moderate effect size for spiritually oriented psychotherapies (Smith, Bartz, & Scott Richards 2007).

However the findings from this study indicate that spirituality has a broader effect upon Indian post-graduate university students' QoL than just psychological QoL. As such the findings from this study indicate that improving the spirituality of post-graduate Indian university

students may have an impact upon a range of different dimensions of QoL. This should provide encouragement to Indian university administrators, or administrators of international universities with high populations of Indian students, to consider embedding programs to provide training in spirituality within curriculum or university based activities. While currently such programs are likely to be rare in most universities, there are some isolated examples of universities embedding training in spirituality in to curriculum (Brawer, Handal, Fabricatore, Roberts, & Wajda-Johnston 2002; Schmidt-Wilk, Heaton, & Steingard 2000). As evidence builds in linking spirituality to QoL in university student populations, there may be stronger arguments for more universities to consider such options.

Given that negative religious coping proved to be the strongest independent variable in this study, there is a need to further investigate interventions that can reduce this variable in this population. There is some evidence in other populations that Christian pastoral care can significantly reduce negative religious coping (Bay, Beckman, Trippi, Gunderman, & Terry 2008). Given that the majority of participants in this study were Hindu, with a smaller percentage being Christian and Muslim, future studies should explore the efficacy of Hindu and Muslim pastoral care upon negative religious coping and QoL.

Finally, while the results of this study suggest the value of developing interventions for enhancing spirituality in university students in order to improve their quality of life, there are also clear ethical implications that accompany such implications with regards to respecting personal values and choice in engaging in such interventions. As such an important next step may involve conducting exploratory studies about the needs and preferences of Indian university students, as well as investigating the current efforts/activities/preferences of key stakeholders at Indian Universities. Findings from such studies would help guide the development of

implementable and sustainable interventions for improving the spirituality and therefore QoL of Indian post-graduate university students.

Conclusion

Cultural factors have a strong bearing upon the experience of QoL upon all individuals including university students. Given that religion/spirituality is such an integral aspect of Indian culture, this study examined the relationship between measures of spirituality and QoL in Indian post-graduate students. The findings of this study indicate that while religiosity did not seem to be associated with QoL, even after adjusting for a range of demographics and social support, measures of spirituality such as negative religious coping, existential well-being and health locus of control were associated with QoL in Indian post-graduate university students. Of the measures of spirituality used in this study, negative religious coping appeared to have the strongest association with QoL in this population.

References

Abdel-Khalek, A. (2010). Quality of life, subjective well-being, and religiosity in Muslim college students. *Quality of Life Research*, *19*, 1133-1143.

Aboalshamat, K., Hou, X., & Strodl, E. (2014). Psychological Health of Medical and Dental Students in Saudi Arabia: A Longitudinal Study. *Public Health Research*, *4*(5), 179-184.

Ai, A., Peterson, C., Rodgers, W., & Tice, T. (2005). Effects of faith and secular factors on locus of control in middle-aged and older cardiac patients. *Aging &Mental Health*, *9*(5), 470-481.

Ano, G., & Vasconcelles, E. (2005). Religious coping and psychological adjustment to stress: A meta analysis. *Journal of Clinical Psychology*, *61*(4), 461-480.

Anye, E. T., Gallien, T. L., Bian, H., & Moulton, M. (2013). The relationship between spiritual well-being and health-related quality of life in college students. *Journal of American College Health*, *61*(7), 414-421.

Barber, N. (2013). Country religiosity declines as material security increases. *Cross-Cultural Research*, *47*(1), 42-50.

Bay, P. S., Beckman, D., Trippi, J., Gunderman, R., & Terry, C. (2008). The effect of pastoral care services on anxiety, depression, hope, religious coping, and religious problem solving styles: a randomized controlled study. *Journal of Religion and Health*, *47*(1), 57-69.

Brawer, P. A., Handal, P. J., Fabricatore, A. N., Roberts, R., & Wajda-Johnston, V. A. (2002). Training and education in religion/spirituality within APA-accredited clinical psychology programs. *Professional Psychology: Research and Practice*, *33*(2), 203.

Burger, P. H. M., Neumann, C., Ropohl, A., Paulsen, F., & Scholz, M. (2016). Development of

    depression and deterioration in quality of life in German dental medical students in

    preclinical semesters. Annals of Anatomy-Anatomischer Anzeiger, 208, 183-186.

Carifio, J., & Rhodes, L. (2002). Construct validities and the empirical relationships between

    optimism, hope, self-efficacy, and locus of control. *Work*, *19*(2), 125-136.

Chen, G., Feng, J., Zhou, C., Wu, Y. L., Liu, X. Q., Wang, C., ... & Lu, S. (2013). Quality of life

    (QoL) analyses from OPTIMAL (CTONG-0802), a phase III, randomised, open-label

    study of first-line erlotinib versus chemotherapy in patients with advanced EGFR

    mutation-positive non-small-cell lung cancer (NSCLC). *Annals of Oncology*, *24*, 1615-

    1622.

Deb, S., McGirr, K., & Sun, J. (2016). Spirituality in Indian university students and its

    associations with socioeconomic status, religious background, social support, and mental

    health. *Journal of Religion and Health, 55*(5), 1623-1641.

Dolan, P., Peasgood, T., & White, M. (2008). Do we really know what makes us happy? A

    review of the economic literature on the factors associated with subjective well-

    being. *Journal of Economic Psychology*, *29*(1), 94-122.

Gabriel, Z., & Bowling, A. (2004). Quality of life from the perspectives of older people. *Ageing

    and Society*, *24*, 675-691.

Gardner, T. M., Krägeloh, C. U., & Henning, M. A. (2014). Religious coping, stress, and quality

    of life of Muslim university students in New Zealand. *Mental Health, Religion &

    Culture, 17*(4), 327-338.

Gebauer, J. E., Sedikides, C., & Neberich, W. (2012). Religiosity, social self-esteem, and

psychological adjustment on the cross-cultural specificity of the psychological benefits of religiosity. *Psychological Science*, *23*(2), 158-160.

Genia, V. (2001). Evaluation of the spiritual well-being scale in a sample of college students. *The International Journal for the Psychology of Religion*, *11* (1), 25-33.

Gijsberts, M. J. H., Echteld, M. A., van der Steen, J. T., Muller, M. T., Otten, R. H., Ribbe, M. W., &Deliens, L. (2011). Spirituality at the end of life: Conceptualization of measurable aspects—A systematic review. *Journal of Palliative Medicine*, *14*(7), 852-863.

Hasson-Ohayon, I., Kravetz, S., Meir, T., & Rozencwaig, S. (2009). Insight into severe mental illness, hope, and quality of life of persons with schizophrenia and schizoaffective disorders. *Psychiatry Research*, *167*(3), 231-238.

Hebert, R., Zdaniuk, B., Schulz, R., & Scheier, M. (2009). Positive and negative religious coping and well-being in women with breast cancer. *Journal of Palliative Medicine*, *12*(6), 537-545.

Henning, M. A., Krägeloh, C., Thompson, A., Sisley, R., Doherty, I., & Hawken, S. J. (2015). Religious affiliation, quality of life and academic performance: New Zealand medical students. *Journal of Religion and Health*, *54*(1), 3-19.

Holder, M. D., Coleman, B., Krupa, T., & Krupa, E. (2016). Well-being's relation to religiosity and spirituality in children and adolescents in Zambia. Journal of Happiness Studies, 17(3), 1235-1253.

Hsien-Chuan Hsu, P., Krägeloh, C. U., Shepherd, D., & Billington, R. (2009). Religion/spirituality and quality of life of international tertiary students in New Zealand: An exploratory study. *Mental Health, Religion and Culture*, *12*(4), 385-399.

Ibrahim, N., Din, N. C., Ahmad, M., Ghazali, S. E., Said, Z., Shahar, S., ... Razali, R. (2013).

Relationships between social support and depression, and quality of life of the elderly in

a rural community in Malaysia. *Asia Pacific Psychiatry*, *5*(S1), 59-66.

Jafari, N., Farajzadegan, Z., Zamani, A., Bahrami, F., Emami, H., &Loghmani, A. (2013).

Spiritual well-being and quality of life in Iranian women with breast cancer undergoing

radiation therapy. *Supportive Care in Cancer*, *21*(5), 1219-1225.

Koenig, H. G. (2008). Concerns about measuring "spirituality" in research. *The Journal of*

Nervous and Mental Disease, *196*(5), 349-355.

Koenig, H. G. (2009). Research on religion, spirituality, and mental health: A review. *The*

Canadian Journal of Psychiatry, *54*(5), 283-291.

Koenig, H. G., & Büssing, A. (2010). The Duke University Religion Index (DUREL): A five-

item measure for use in epidemological studies. *Religions*, *1*(1), 78-85.

Koenig, H. G., George, L. K., & Peterson, B. L. (1998). Religiosity and remission of depression

in medically ill older patients. *American Journal of Psychiatry*, *155*(4), 536-542.

Kostka, T., & Jachimowicz, V. (2010). Relationship of quality of life to dispositional optimism,

health locus of control and self-efficacy in older subjects living in different

environments. *Quality of Life Research*, *19*(3), 351-361.

Krägeloh, C. U., Henning, M. A., Billington, R., & Hawken, S. J. (2015). The relationship

between quality of life and spirituality, religiousness, and personal beliefs of medical

students. *Academic Psychiatry, 39*(1), 85-89.

Lau, W. W., Hui, C. H., Lam, J., Lau, E. Y., & Cheung, S. F. (2015). The relationship between

spirituality and quality of life among university students: An autoregressive cross-lagged

panel analysis. *Higher Education*, *69*(6), 977-990.

Leserman, J., Whetten, K., Lowe, K., Stangl, D., Swartz, M. S., &Thielman, N. M. (2005). How

    trauma, recent stressful events, and PTSD affect functional health status and health

    utilization in HIV-infected patients in the south. *Psychosomatic Medicine*, *67*, 500-507.

Li, K., Kay, N. S., & Nokkaew, N. (2009). The performance of the World Health Organization's

    WHOQOL-BREF in assessing the quality of life of Thai college students. *Social*

    Indicators Research, *90*(3), 489-501.

Lins, L., Carvalho, F.M., Menezes, M.S., Porto-Silva, L., Damasceno, H. (2015). Health-related

    quality of life of students from a private medical school in Brazil. *International Journal*

    of Medical Education, 8(6), 149-154.

Lun, V. M. C., & Bond, M. H. (2013). Examining the relation of religion and spirituality to

    subjective well-being across national cultures. *Psychology of Religion and*

    Spirituality, *5*(4), 304-315.

Ma, X., & McGhee, S. M. (2013). A cross-sectional study on socioeconomic status and health-

    related quality of life among elderly Chinese. *BMJ Open*, *3*(2), 1-9.

Marshall, L. L., Allison, A., Nykamp, D., &Lanke, S. (2008). Perceived stress and quality of life

    among doctor of pharmacy students. *American Journal of Pharmaceutical*

    Education, *72*(6), 1-8.

Mercier, C., Peladeau, N., &Tempier, R. (1998). Age, gender and quality of life. *Community*

    Mental Health Journal, *34*(5), 487-500.

Mirghafourvand, sM., Charandabi, S. M. A., Sharajabad, F. A., & Sanaati, F. (2016). Spiritual

    well-being and health-related quality of life in Iranian adolescent girls. *Community*

    Mental Health Journal, *52*(4), 484-492

Moshki, M., & Ashtarian, H. (2010). Perceived health locus of control, self-esteem, and its

relations to psychological well-being status in Iranian students. *Iranian Journal of Public*

Health, *39*(4), 70.

Ng, N., Hakimi, M., Byass, P., Wilopo, S., & Wall, S. (2010). Health and quality of life among

older rural people in Purworejo District, Indonesia. *Global Health Action*, *3(1)*, 78-87.

Paloutzian, R. F., & Ellison, C.W. (1982). Loneliness, spiritual well-being, and quality of life. In

L. A. Peplau & D. Perlman (Eds.), *Loneliness: A Sourcebook of Current Theory,*

Research and Therapy. New York: Wiley.

Pargament, K. I. (1999). The psychology of religion and spirituality? Yes and no.

International Journal for the Psychology of Religion, 9, 3–16.

Pargament, K. I., Smith, B. W., Koenig, H. G., & Perez, L. (1998). Patterns of positive and

negative religious coping with major life stressors. *Journal for the Scientific Study of*

Religion, *37*, 710-724

Pargament, K., Feuille, M., & Burdzy, D. (2011). The Brief RCOPE: Current psychometric

status of a short measure of religious coping. *Religions*, *2*(1), 51-76.

Paukert, A. L., Phillips, L., Cully, J. A., Loboprabhu, S. M., Lomax, J. W., & Stanley, M. A.

(2009). Integration of religion into cognitive-behavioral therapy for geriatric anxiety and

depression. *Journal of Psychiatric Practice*, *15*(2), 103-112.

Pekmezovic, T., Popovic, A., Tepavcevic, D. K., Gazibara, T., &Paunic, M. (2011). Factors

associated with health-related quality of life among Belgrade University students. *Quality*

of Life Research, *20*(3), 391-397.

Pesut, B., Fowler, M., Taylor, E. J., Reimer   Kirkham, S., & Sawatzky, R. (2008).

Conceptualising spirituality and religion for healthcare. *Journal of Clinical Nursing*, *17*(21), 2803-2810.

Raj, S. R., Simpson, C. S., Hopman, W. M., & Singer, M. A. (2000). Health-related quality of life among final-year medical students. *Canadian Medical Association Journal*, *162*(4), 509-510.

Salsman, J. M., Brown, T. L., Brechting, E. H., & Carlson, C. R. (2005). The link between religion and spirituality and psychological adjustment: The mediating role of optimism and social support. *Personality and Social Psychology Bulletin*, *31*(4), 522-535.

Saroglou, V., & Cohen, A. B. (2013). Cultural and cross-cultural psychology of religion. In R. F. Paloutzian & C. L. Park (Eds.), *Handbook of the Psychology of Religion and Spirituality* (pp. 330-354) New York: The Guilford Press.

Sawatzky, R., Ratner, P. A., & Chiu, L. (2005). A meta-analysis of the relationship between spirituality and quality of life. *Social Indicators Research*, *72*(2), 153-188.

Smith, T. B., Bartz, J., & Scott Richards, P. (2007). Outcomes of religious and spiritual adaptations to psychotherapy: A meta-analytic review. *Psychotherapy Research*, *17*(6), 643-655.

Schmidt-Wilk, J., Heaton, D. P., & Steingard, D. (2000). Higher education for higher consciousness: Maharishi University of Management as a model for spirituality in management education. *Journal of Management Education*, *24*(5), 580-611.

Storch, E. A., Roberti, J. W., Heidgerken, A. D., Storch, J. B., Lewin, A. B., Killiany, E. M., ... & Geffken, G. R. (2004). The Duke Religion Index: A psychometric investigation. *Pastoral Psychology*, *53*(2), 175-181.

Storch, E. A., Strawser, M. S., & Storch, J. B. (2004).Two-week test-retest reliability of the
Duke Religion Index. *Psychological Reports*, *94*(3), 993-994.

Tarakeshwar, N., Vanderwerker, L. C., Paulk, E., Pearce, M. J., Kasl, S. V., & Prigerson, H. G.
(2006). Religious coping is associated with the quality of life of patients with advanced
cancer. *Journal of Palliative Medicine*, *9*(3), 646-657.

Vaez, M., de Leon, A. P., & Laflamme, L. (2006). Health-related determinants of perceived
quality of life: a comparison between first-year university students and their working
peers. *Work*, *26*(2), 167-177.

Wallston, K. A. (2005). The validity of the multidimensional health locus of control
scales. *Journal of Health Psychology*, *10*(5), 623-631.

Wallston, K. A., Wallston, B. S., & DeVellis, R. (1978). Development of the multidimensional
health locus of control (MHLC) scales. *Health Education & Monographs*, *6*(2), 160-170.

WHOQoL Group. (1998). Development of the World Health Organization WHOQOL-BREF
quality of life assessment. *Psychological Medicine*, *28*(03), 551-558.

WHOQoL SRPB Group. (2006). A cross-cultural study of spirituality, religion, and personal
beliefs as components of quality of life. *Social Science & Medicine*, *62*(6), 1486-1497.

Table 1

Description of the sample

	n	%		n	%
Gender			Family income (lakh)		
Male	241	50.7	< 1	263	55.4
Female	234	49.3	1-4	164	34.5
Age (years)			>4	48	10.1
20-21	178	37.5	Family type		
22-23	45	224.0	Joint	144	30.3
24-27	73	15.4	Nuclear	331	69.7
Education			Perceived family environment		
Integrated	64	13.5	Highly supportive	205	43.2
Non-integrated	411	86.5	Moderately supportive	248	52.2
Discipline			Not so supportive	22	4.6
Science	253	53.3	Perceived university environment		
Humanities and social science	131	27.6	Highly supportive	125	26.3
Commerce and management	91	19.2	Moderately supportive	315	66.3
Place of origin			Not so supportive	35	7.4
North	58	12.2	Perceived parent support		
South	348	73.3	Highly supportive	372	78.3
East	46	9.7	Moderately supportive	90	18.9
West	3	.6	Not so supportive	13	2.7
Northeast	20	4.2	Perceived teacher support		

Marital status			Highly supportive	151	31.8
Married	15	3.2	Moderately supportive	274	57.7
Unmarried	457	96.2	Not so supportive	50	10.5
Separated	3	.6	Perceived classmate support		
Religion			Highly supportive	248	52.2
Hindu	371	78.1	Moderately supportive	196	41.3
Christian	55	11.6	Not so supportive	31	6.5
Muslim	35	7.4	Experiencing serious life crisis		
Others or none	14	2.9	Yes	273	57.5
			No	202	42.5

NB: Place of origin refers to region of India that the participant was born in; Family income

(lakh) is per month; Nuclear family type = living with family of origin only; Joint family type =

living with family of origin and extended family;

Table 2

Means, standard deviations and correlation coefficients of the WHOQOL-BREF

	M (*SD*)	1	2	3	4
1. QoL-Physical	22.48 (3.52)	1			
2. QoL-Psychological	21.13 (3.80)	.67***	1		
3. QoL-Social	11.04 (2.16)	.46***	.53***	1	
4. QoL-Environmental	28.07 (4.73)	.57***	.68***	.54***	1
5. QoL-Total	82.72 (11.91)	.82***	.88***	.70***	.88***

Note. M = mean, *SD* = standard deviation. **p*<.05, ***p*<.01, *p*<.001

Table 3

Means scores (SDs) and inter-scale correlations of spirituality measures

	M (*SD*)	1. DUREL	2. NRCOPE	3. SWBS
1. DUREL	16.49 (5.48)	1		
2. NRCOPE	43.19 (7.74)	.15**	1	
3. EWBS	23.07 (4.88)	.03	.24***	1
4. MHLC	25.07 (6.07)	-.05	.25***	.11*

Note. *M* = mean, *SD* = standard deviation; DUREL = Duke University Religion Index; NRCOPE = Negative Religious Coping; EWBS = Existential Well-Being Scale; MHLC = Internal/external subscale of the Multiple Health Locus of Control Scale. **p*< .05; ***p*< .01, ***p*<.001 for correlation coefficients

Table 4

Bivariate correlations between demographics, social support and QoL

Variables	QoL-physical	QoL-psychological	QoL-social	QoL-environ-mental	QoL-total
Gender	-.02	.002	.01	.11*	.04
Education	-.01	.03	.08	.02	.03
Family Type	-.07	0.10*	-.04	-.003	-.06
Crisis	.02	.04	-.002	.06	.04
Age	-.01	.04	.14**	.08	.07
Family income (lakh)	.09*	.12*	.06	.20***	.16**
Family Support	-.14**	-.25***	-.19***	-.27***	-.26***
University Support	-.16**	-.20***	-.14**	-.20***	-.22***
Parent support	-.11*	-.14**	-.14**	-.13**	-.16**
Teacher support	-.19***	-.26***	-.28***	-.27***	-.30***
Classmate support	-.16**	-.21***	-.30***	-.16***	-.23***

*p<.05; **p<.01; ***p<.001*

Table 5

Correlation coefficients between QoLand spirituality scores

	QoL-physical	QoL-psychological	QoL-social	QoL-environmental	Qol total
DUREL	.12**	.15**	.10*	.15**	.16***
NRCOPE	.47***	.58***	.41***	.49***	.60***
EWBS	.23***	.29***	.17***	.25***	.29***
MHLC	.23***	.22***	.25***	.29***	.29***

Note. DUREL = Duke University Religion Index (spiritual practice); NRCOPE = Negative Religious Coping (spiritual belief); EWBS = Existential Well-Being Scale (sense of purpose or connection); MHLC = Internal/external subscale of the Multiple Health Locus of Control Scale (sense of hope or control); *p< .05; **p< .01

Table 6

Multivariable models for quality of life scores on spirituality scores and background variables

	QoL-Physical	QoL-psychological	QoL-social	QoL-environmental	QoL-Total
Step 1: Covariates					
Age			.15**		
Family Income				.19***	
Family Support	-.09*	-.18***	-.12**	-.19***	-.19***
University Support	-.09	-.10*	-.03	-.12*	-.10*
Parent support		-.03	-.03	.00	-.03
Teacher support	-.12*	-.16**	-.17***	-.19***	-.19***
Classmate support	-.09	-.11*	-.22***	-.05	-.12*
Step 2: Spirituality					
Age			.12**		
Family Income				.12**	
Family Support	-.02	-.10**	-.08	-.13**	-.11**
University Support	-.06	-.07	.002	-.08	-.07
Parent support		.009	-.005	.02	.006
Teacher support	-.04	-.07	-.12**	-.11**	-.10*
Classmate support	-.04	-.06	-.18***	-.001	-.06
DUREL	.06	.05		.06	.07
NRCOPE	.38***	.47***	.29***	.34***	.45***
EWBS	.12**	.15***	.05	.11**	.14***

	QoL-Physical	QoL-Psychological	QoL-Social	QoL-Environment	QoL-Total
MHLC	.10*	.05	.12**	.15***	.13***
Model statistics					
F	20.52***	35.10***	19.63***	25.04***	41.40***
R^2	.26	.40	.28	.35	.45
Adjusted R^2	.25	.39	.26	.34	.43

Note. DUREL = Duke University Religion Index (spiritual practice); NRCOPE = Negative Religious Coping (spiritual belief); EWBS = Existential Well-Being Scale (sense of purpose or connection); MHLC = Internal/external subscale of the Multiple Health Locus of Control Scale (sense of hope or control); *p*<.05, **p*<.01, ***p*<.001; the degrees of freedom for each F test is shown respectively: QoL-Physical $F_{(8, 466)}$, QoL-Psychological $F_{(9, 465)}$, QoL- Social $F_{(10, 464)}$, QoL-Environment $F_{(10, 464)}$, QoL-Total $F_{(9, 465)}$.