Mixed methods: Challenges to investigate older persons with depression in Macau

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Abstract **Aim:** In this paper, suggestions are offered about the appropriate use of mixed methods in one study to research older persons with depression in Macau. **Method:** A mixed methods research design using both quantitative and qualitative approaches was employed to interpret the lived experiences of these older persons. The final study involved 31 older persons with depression. A range of standardised, validated scales were employed to determine eligibility to participate and to quantify a variety of psychosocial factors that may be associated with the lives of these older persons. Questions raised by these quantitative results were then reflected on through in-depth interview, that generated data collected using an open-ended interview guide to identify the life events, issues and common thinking patterns in older persons that relate to depression in Macau. **Findings:** These lived experiences clustered into four broad dominant categories: negative thinking, physical limitations and complaints, present living conditions and social support, and the lives they have lived. All the 31 participants appeared to interpret their ongoing experiences using powerful emotional terms. The Chinese older persons in Macau experienced depression more cognitively. **Conclusions:** Mixed methods can be creatively and successfully used in one study if there has been adequate consideration of vital factors.

Keywords: mixed methods, older persons, depression, Chinese context

1. Introduction

Deliberations over design alternatives and choice of methods led directly to consideration of the relative strengths and weaknesses of qualitative and quantitative data. The advantage of a quantitative approach was that it was possible to measure the reactions of a larger number people to a limited set of questions, thus facilitating comparison and statistical aggregation of the data. This gave a broad, generalisable set of findings presented succinctly and parsimoniously. By contrast, qualitative methods typically produced a wealth of detailed information about a much smaller number of people and cases. This increased the depth of understanding of the cases and situations studied, but reduced generalisability (Patton, 2002). Thurmond (2001) argued that triangulation could increase the ability to interpret findings. Arising from a study of depressed older persons conducted between 2007 and 2009 in Macau, in this paper, suggestions are offered about the appropriate use of mixed methods in one study to research older persons with depression in Macau.

2. Background

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Depression has been described as the commonest and the most reversible mental health problem in old age (Chen & Jiang, 2000; Ebersole & Hess, 2001; Lueckenotte, 2000) and contributes to high rates of morbidity and mortality, especially if untreated (Anderson, 2001). In 2003, over half of the attendees of day centres for older person in Macau were found to be suffering from depressions (Li, Li, Liu, Qiu, & Zeng, 2003). These rates appear high especially when compared to those in the UK (10 percent to 15 percent of the population over 65) (Ebersole & Hess, 2001) and 19.1 percent among 1087 representative community older persons in Hong Kong (Chou & Chi, 2005). Similar symptoms were also found in a number of other studies conducted in Chinese society, such as in 150 elders randomly selected in Taiwan (Tsai, Chung, Wong, & Huang, 2005), in 630 community-dwelling older persons in Mainland China (Feng, Jia, Hu, Wang, & Ji, 2004), and even in the immigrant Chinese elderly in the United States of American (Mai-Nakagawa, 2005). However, all the above studies adopted a quantitative approach using the Geriatric Depression Scale (GDS) or the Center of Epidemiological Studies of Depression (CES-D) scales to investigate the phenomenon. The scores of the scales to indicate depression reported in the above studies facilitated comparison and statistical aggregation of the data, but did not capture the depth of understanding of the

participants and situations studied (Patton, 2002). A limitation of most research based on closed response questionnaires is that reasons behind the responses are not known, and results did not tell us what was the focus or substance of negative thinking and what were the effects on the person. It was this gap in understanding and knowledge that this study was seeking to address.

In response to a lack of information about, and understanding of, Macau's older persons' lives contributing to and sustaining dysphoria that any intervention would need to take account of, it became clear that a number of questions needed to be answered to provide data that can then be used to develop culturally appropriate interventions. These questions include: What are the lived experiences of older persons with depression in Macau? What are the principal influences on depression among older persons in Macau? How can this information be used to inform health care, and nursing services, in particular to help prevent, detect and protect older persons from depression in Macau? These and other questions informed the development of the research design.

3. Research design

To answer these questions, a general qualitative research orientation using in-depth interviews, with minimal structure, was deemed to be the most appropriate. Data collected from different sources were subsequently used, including person triangulation to cross-validate data for the purpose of confirmation (Knafl & Breitmayer, 1991). As advocated by Clamp and Gough (1999) and Feher (1991), different sources of data were included within this study to obtain diverse material that would provide a more complete picture of the topic under investigation. To supplement the qualitative data, a number of standardised, validated scales, including the Mental Status Questionnaire (MSQ), the Geriatric Depression Scale-15 (GDS-15), the Reduced Item Barthel Index (BI), the Lawton Instrument of Activities of Daily Living Questionnaire (IADL), the Lubben Social Network Scale (LSNS), the 36-item Short-Form Health Survey of Quality of Life (SF-36QOL), and demographic data were used. The purposes of the quantitative tools were two-fold; to determine eligibility of older persons to participate, and to quantify a variety of psychosocial factors that may be associated with the experiences of older persons with depression in Macau that could then be compared with data from other similar populations in previous studies.

Van Manen's (1984) phenomenological method, a dynamic interplay among six research activities, offers an appropriate scientific and rigorous method and for this reason was used in this study:

1. Turning to a phenomenon, which seriously interests us and commits us to the world;
2. Investigating experience as we live it rather than as we conceptualise it;
3. Reflecting on the essential themes that characterize the phenomenon;
4. Describing the phenomenon through the art of writing and rewriting;
5. Maintaining a strong and oriented relation to the phenomenon;
6. Balancing the research context by considering parts and whole.

The decision to use this phenomenological method is a complex one that is grounded in the understanding that the approach selected must be the best one to answer the research questions. Nursing's philosophical beliefs about humans and the holistic nature of professional nursing provided further direction and guidance. Nursing encourages detailed attention to the care of people as individuals and grounds its practice in a holistic belief system guiding nurses to care for the mind, body and spirit. This holistic perspective helps to form the foundation for phenomenological inquiry, which brings everyday knowledge to conscious awareness for understanding and interpretation (Wilde, 2002) and attempts to interpret human experience in its context. Because phenomenological inquiry requires that the integrated whole be explored, it is therefore a suitable method for this. "Turning to the nature of lived experience" (Van Manen, 1997, p. 30) required

that the researcher attend to his own experiences and presuppositions, in this case an extensive knowledge base that developed through involvement with the care of older persons and community over fifteen years of teaching and practice expertise, related to the phenomenon. "Investigation" (Van Manen, 1997, p. 30) entailed conducting audio-taped face-to-face interviews with participants. Van Manen (1997) suggested analytical techniques help to elicit concepts related to space, body, time and relations with others.

4. Mixed Methods Analysis

In this study, the mixed methods analysis followed a dominant to less dominant and sequential mixed designs (Tashakkori & Teddlie, 2003) in which there are two phases that occur chronologically: quantitative analysis (low priority) → QUALITATIVE analysis (high priority). The conclusions that are made on the basis of the results of the quantitative analysis phase lead to formulation of questions, data collection, and data analysis for the next qualitative analysis phase. The final inferences are based on the results of both phases of the study. The qualitative analysis phase of the study is conducted either to confirm/disconfirm the inferences of the quantitative analysis phase or to provide further explanation for findings from the quantitative analysis phase (Tashakkori & Teddlie, 2003). To be considered a mixed-method design, the findings must be mixed or integrated at some point, seeking convergence of results and adding breadth and scope to the study (Tashakkori & Teddlie, 1998). A quantitative phase might be conducted to inform a qualitative phase, sequentially. In the case of this sutdy the first part of the analysis (based on data from MSQ, GDS-15, BI, Lawton IADL, LSNS, and SF-36QOL) were used to quantify a variety of psychosocial factors that may be associated with the experiences of older persons with depression in Macau, via descriptive statistics and inferential statistics. Based on these quantitative analyses, questions raised by these quantitative results were then reflected on and expanded through the narratives of the participants related to this phenomenon. In this strategy, the objective was first to establish the relationships between dominant categories and themes through inferential statistics of quantitative data and then to collect qualitative data to confirm and expand upon the information that is available regarding these relationships (Tashakkori & Teddlie, 1998). Both quantitative data and qualitative data are combined to create consolidated data sets and integrated into a coherent whole in this study (Onwuegbuzie & Johnson, 2004).

5. Ethic Consideration

Permission was sought from both the Research Ethics Committee of Kiang Wu Nursing College of Macau and The University of Auckland Human Participants Ethics Committee prior to undertaking the study. Permission to access the older persons referred by the day centres/recreational centres for the elderly was gained from the managers of the centres. A consent form with information about the study was distributed to each person deemed eligible for inclusion into the study, and if consent was given then consent form was signed or finger stamped, in the case of illiterate persons, by participants or oral permission was tape-recorded by participants. The researcher agreed to retain the consent forms, which will be stored separately from the data for six years after completion of the study.

6. Profile of Participants

Thirty-one older persons who met the inclusion criteria participated in the study. The ages of the 31 older persons with depression ranged from 69 years to 92 years with a mean of 78.7 years. Most of them were female (71.0%, n=22). The profile of the study population was compared to the general population of older persons in Macau, created following the Macau Census 2006, using z-test. Although the percentage of males was less than in the general population of older persons, there was no statistical difference for the gender component between the two populations ($z=1.595$, $p=0.111$).

Table 1 Demographic Data of the Participants

Variable	Participants		Population of older persons*		Participants age (years)				
	n	%	n	%	Age	Mean	SD	Median	Range
Male	9	29.0	15282	43.2#	72.9	77.0	8.0	73.0	22
Female	22	71.0	20073	56.8	74.8	79.4	5.4	79.5	22
Total	31	100.0	35355	100.0	73.9	78.7	6.2	78.0	23

Notes:# z=1.595, p=0.111

* Adapted from: Macau Statistics and Census Bureau, 2007a

The male gender had previously been identified as an influencing factor for depression in Macau (Li et al., 2003). Within traditional Chinese culture, men are perceived as strong masculine figures. Chinese idioms abound, such as 'a man prefers blood more than tears' and 'men have no fear' that portray a strong masculine figure. Chinese men may find it hard to express their emotions and seek help for their depression (Chan, Chiu, Chien, Thompson, & Lam, 2006). Men are socialised to suppress their emotions and they might perceive seeking help for mood problems as a sign of weakness (Thompson, 2000). The result indicated that the participants were representative of the general population of older persons in Macau. Details are showed in Table 1.

Many of the 31 participants were widowed (64.5%, n=20), whilst 9.7 percent (n=3) were divorced, and 12.9 percent (n=4) had never married. Most of the participants (71.0%, n=22) were illiterate. Over half of the participants (54.8%, n=17) were living alone, whilst 48.4 percent (n=15) depended on subsidy and 22.6 percent (n=7) of them received no income resource. The findings revealed that the participants suffered from worse living conditions and social support than the general population of older persons in Macau.

A criterion for inclusion in the study was the presence of depression, as measured by GDS-15 with cut-off point of eight, however the mean of 11.5 indicated that all of the 31 older persons were seriously depressed (Chiu et al., 1994; Lee et al., 1993). In terms of the SF-36QOL psychological aspects, role-emotional had a mean of 7.53, social functioning showed a mean of 22.18, mental health had a mean of 25.16, vitality showed a mean of 25.81 and general health had a mean of 26.97. These findings were compared with those of the total population and the general population of older persons in Hong Kong and revealed that the 31 older persons suffered from worse mental states.

The questionnaire also demonstrated that all participants suffered from physical disorders. Furthermore, almost all the participants (90.3%, n=28) self-reported at least three or more physical disorders. Nearly half of the participants (45.2%, n=14) had BI scores less than 100, which indicated the participants suffered from varying degrees of physical impairment in activities of daily living. There were 6.5 percent (n=2) who had BI scores less than 56, indicating total to severe dependency for activities of daily living (Wang, 2000). There were 61.3 percent (n=19) of the participants who felt unable to undertake activities of daily living or could do so only with difficulty and with help (Lawton & Brody, 1969; Spector, 1990). SF-36QOL physical aspects consisted of physical functioning with a mean of 40.16, role-physical with a mean of 12.10, bodily pain with a mean of 40.58, vitality with a mean of 25.81 and general health with a mean of 26.97. These data were compared with the total population norm and the general population of older persons norm in Hong Kong (Lam, Lauder, Lam, & Gandek, 1999). The results showed that the 31 older persons with depression had worse physical conditions than both the total population and the general population of older persons in Hong Kong. Furthermore, the results showed that high GDS-15 scores (indicating depression) were correlated with low BI, IADL, SF-36QOL physical aspects scores (indicating poor physical function).

From what was observed, all except one of the participants (30 of 31 participants) had a LSNS score less than 20. The findings indicated that most participants tended to reach an extreme risk for limited social networks when compared with the general population of older persons in Macau. The

SF-36QOL social functioning aspect, with a mean of 22.18, was compared with the total population norm and the general population of older persons norm in Hong Kong (Lam et al., 1999) and the results showed that the 31 older persons with depression had worse social functioning than the total population and the general population of older persons in Hong Kong, comparable populations. Furthermore, the results showed that high GDS-15 scores (indicating depression) were correlated with low LSNS, SF-36QOL social functioning scores (indicating poor social function).

The BI, SF-36QOL, and GDS-15 were utilised to quantitatively measure the effects of the lives they had lived on the physical conditions and mental states of the participants. Two groups were formed from these results: Group A, who focused on their hard life from early in life, ranked a moderate dependency level of BI activities of daily living with a mean of 83.3, while Group B, who were not so focused on a hard life, suffered from a mild dependency level only, with BI with a mean of 97.3. Moreover, Group A reported worse physical health conditions (GH mean score of 21.7) when compared with Group B (GH mean score of 34.3). Regarding psychological scores, Group A presented with worse mental health state (MH mean score of 20.9) than Group B (MH mean score of 31.1). Furthermore, the results implied that Group A was more seriously depressed than Group B.

To summarise, while demographically the participants reflected the Macau population of older persons in term of gender and age, the quantitative data consistently showed that the participants had worse scores than comparable populations previously studied in Macau or Hong Kong.

7. Dominant Categories Found

Against a background of negative scores for physical and mental health, and for family and social networks, the findings identified some of the factors in the lives of the study population that might explain the scores, and in particular, high depression scores. The lived experiences of older persons with depression in Macau were complex and, in many ways unique; the lives of no two persons were the same. Using the iterative approaches described previously, the data from the study clustered into four broad dominant categories: negative thinking; physical limitations and complaints; present living conditions and social support; and the lives they have lived.

The first dominant category, "negative thinking", was key to the lived experiences of the 31 depressed older persons since all participants had negative views of themselves. This dominant category consisted of the following themes: feeling useless; hopelessness; sadness; and helplessness.

The second dominant category, "physical limitations and complaints", was strongly linked with the lived experiences of these older persons and the increased dependency that they were confronted with was likely to also strengthen their feelings of uselessness and hopelessness (Li et al. 2003). It covered the following sub-categories: physical limitations, including themes of limited mobility and dependence on others; physical complaints, including themes of chronic joint pain, cannot sleep, poor appetite and poor memory; and impact of medical treatments and access problems, including themes of complex medication regimens and difficulties in getting to hospital.

The third dominant category, "present living conditions and social support", played an important role in their lived experiences of these older persons and all the participants expressed great concern about this aspect of life. It consisted of the following sub-categories: hardship, including themes of being poor, being illiterate, and injustice; poor family relationships, including themes of being widowed, living alone, conflict with adult children, and being neglected by children; and limited social network, including themes of being looked down upon by others and lack of social contact.

The final dominant category, "the lives they have lived", was about their poor experiences from early in life and included the following themes: hard labour with low reward; being fatherless; having a bad marriage; and trauma from wars and revolutions.

The relationships among the four dominant categories were illustrated as a symbol of a damaging flame. The older persons with depression appeared to be deeply "burned", reflecting a Chinese saying that suffering like being "burned by hot flame and sunk by deep sea". Their narratives revealed that they were burned by negative thinking, physical limitations and complaints, present living conditions and social support and the lives they have lived, and that they could see no way out of their suffering. These four dominant categories were not independent, but interacted with and were compounded by other dominant categories.

8. Mapping Qualitative and Quantitative Data

Both the qualitative data and quantitative data facilitated the interpretetation and illumination of the lived experiences of these older persons with depression in Macau. Quantitative data, generated by standardised instruments, were mapped against the four dominant categories that emerged from the narratives. The relationships among the four dominant categories and quantitative indicators are illustrated in Table 2.

Table 2 Combination of Qualitative and Quantitative Data of the Study

Dominant category	Quantitative indicators*
Negative thinking	GDS-15
	SF-36QOL: RE SF MH VT GH
Physical limitations and complaints	BI
	IADL
	SF-36QOL: PF RP BP VT GH
	Physical disorders
Present living conditions and social support	LSNS
	SF-36QOL:SF
	Demographic data: Marriage status,highest educational level attained, living circumstance, income source
The lives they have lived	GDS-15
	BI
	SF-36QOL: MH GH

*Notes:

BI=Reduced Item Barthel Index
GDS-15=Geriatric Depression Scale-15
IADL=Lawton Instrument of Activities of Daily Living Questionnaire
MH=mental health
RE=role-emotional
SF=social functioning
BP=bodily pain
GH=general health
LSNS=Lubben Social Network Scale
PF=physical functioning
RP=role-physical
VT=vitality

9. Conclusion

A mixed methods design using both qualitative and quantitative approaches was adopted in this study. The research approach chosen was influenced by the phenomenon of a Chinese context, the researcher's prepositions and Van Manen's approach of phenomenology. These qualitative approaches were supplemented by the collection of a selection of quantitative data using standardised instruments validated to be used in the population, to strengthen the comparison of the study population with the larger population, and to improve the generalisability of the findings to the wider population of older persons with depression. Details appertaining to the analyses were also presented.

By adopting mixed methods, using both qualitative and quantitative approaches, it has been possible to gain, for the first time, a deeper understanding of the nature and meaning of the negative feelings experienced by older persons with depression in Macau. The present study has advanced previous research describing depression among Chinese older persons. Furthermore, the mixed methods approach that had been utilised in the study allows a wider and more complete picture to be captured and has produced a fully grounded interpretative research approach (Denzin, 1989). The approach increases the ability to interpret findings (Thrumond, 2001), and by adding to the body of knowledge on rates of depression, provides an improved understanding of the lived experiences of older persons with depression in Macau.

Futhermore, the findings of the present study advance the current understanding and knowledge of depression among Chinese, especially Chinese older persons. In contrast to Kleinman's findings that Chinese persons with depression tend to report distress in terms of somatisation, not mental distress, all the participants in the present study expressed their ongoing experiences in powerful terms of affect, including uselessness, tragedy, misery, pain, suffering, and unhappiness. This may be because

the Chinese older persons in Macau represent a particular society, where there has been exchange between Chinese culture and western culture more than four hundred years, leading to them experiencing depression more cognitively. If this conclusion is correct, then the findings of this study have particular implications for the large Chinese populations in western countries. Therefore, in nursing teaching and practice, the cultural context of Chinese older persons should be considered and emphasised, especially during periods of rapid social and economic transition that may impacts strongly on older persons.

In conclusion, this study illustrates the strengths of mixed research methods for use in a practice discipline such as nursing. The quantitative approach yielded objective data, allowing measurement and description but not explanation; the scope of these quantitative findings was quite narrow in terms of interpreting the lived experiences of older persons with depression in Macau. On the other hand, the qualitative approach yielded subjective data that is limited in its generalisability. By using both qualitative and quantitative approaches, it has been possible to attain, for the first time, a deeper understanding of the nature and meaning of the negative feelings experienced by older persons with depression in Macau. The mixed methods therefore allow a wider and more complete picture to emerge, and produce a fully grounded interpretative research approach that increased the ability to interpret findings.

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混合式方法在澳門抑鬱老人研究中的應用

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摘要目的：實例分析混合式方法在澳門抑鬱老年人研究的應用。方法：採用質性研究與量性研究相結合的混合式方法對澳門抑鬱老年人進行研究。質性研究採用Van Manen’s演繹性現象學研究方法，量性研究採用如精神認知狀態問卷(MSQ)、老年抑鬱量表(GDS-15)、巴氏日常活動能力評估量表(BI)、Lawton工具性日常活動能力評估量表(IADL)、 Lubben社會網路量表(LSNS)、健康調查問卷(SF-36QOL)等一系列量表。結果：量性研究結果與質性研究結果共同顯示澳門抑鬱老年人表現為負面情緒、生理限制、生活困苦及社交局限、悲慘經歷四大領域。結論：混合式方法能夠成功的應用在澳門抑鬱老年人的研究中。

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The innovation journey of Intermountain Health Care (USA) in improving medical quality

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Abstract This paper analyses the process of how Intermountain Health Care (IHC) of America innovated to improve medical quality. The characteristics of the innovation journey and associated factors are studied. The study found the IHC innovation was a complex but somewhat traceable journey, but not an end. The journey was dynamic and cyclic and had three phases and thirteen steps. The findings contribute to the theory of innovation journey and provide practical insights for practitioners.

Key words Medical quality management Innovation journey Organizational change