Reviews in evidence-based practice

In an era of evidence-based nursing, care providers need to base their clinical decisions on the preferences of patients, their clinical expertise, as well as the current best available research evidence relevant for practice (Beaven and McHugh, 2003; Mulhall, 1998; Sackett and Rosenberg, 1995).

EBP, as a decision-making process which integrates the best available research, clinical expertise and patient's characteristics (Sackett et al., 1997), is believed to be a valuable practice which lead to progress in people's *psychosocial experiences of illness and healthcare as well as in nursing professional development (Hamer, 2005). Muir-Gray (1996) highlights that it bridges the gap between the discovery of knowledge and the time the knowledge is applied in practice, and Thompson (1998) believes it is a guarantee for ' doing the right things right'.

On this basis, systematic reviews has been found as the cornerstone of EBP, stem from Cochrane's work on evidence based medicine in the late 1970s. It has been considered the ' gold standard' for measuring the effectiveness of an intervention (NHS Centre for Reviews and Dissemination, 2001). As a secondary research method, it collates the best evidence about the clinical problem so that conclusions can be drawn about effective practices considering the potential benefits and harm (Hamer, 2005). In fact, with SR being a process for systematically identifying, scrutinising, tabulating and perhaps integrating all relevant studies, thus allowing for a more objective appraisal thatn single studies (Sackett et al., 1997), it has become an indispensable aiding tool in improving practice and quality of care particularly for busy health professionals who do not have enough time for keeping up to date with all the newest research (Greenhalgh, 1997).

Obviously, SRs are important in nursing in order to discover areas where reviews and research are needed and minimise unnecessary duplication of nursing research (Sackett et al., 1997). Thus, there is a requirement to build up a process to provide the results of research findings in a concise way (Mulrow and Cook, 1997). SRs play a vital role in providing fast access to condensed up to date knowledge and offering a new opportunity for EBP in nursing (Muri-Gray, 1996).

Meanwhile, SRs in EBP has a key value as it offer the best approach to determining the highest quality evidence in order to answer clinical questions or solve any conflicting findings (Roberts and Yeager, 2004). And, by adhering closely to scientific procedures, which delimit these biases, according to Schlosser (2006), then SR remains the best vehicle for practitioners to gain access to wide-ranging evidence to aid their practice.

For healthcare professionals, the most important concern in the various debates surrounding EBP is what should establish the evidence for clinical practice (Egger et al., 2001). Thus, in the early 1990s, the term ‘ review of effectiveness’ emerged and the ‘ hierarchy of evidence based on the quality of evidence rating was headed by randomised controlled trials (RCTs)(Cooke et al., 1992). RCT is a considered a quantitative study design, which aims to reduce the bias of confusing issues, manipulate a definite intervention and inspect a possible cause-effect relationship between variables by contrasting different interventions between study groups (Cook et al., 1992). Besides RCTs, there have been additional cohort studies, case series (either post-test or pre-test), well-designed pseudorandomised controlled trials and case-control studies (Cook et al., 1992).

SRs of high-quality RCTs with consistent results are considered to be top of the ‘ hierarchy of evidence’, the most trustworthy evidence for studying the effects of interventions, contrasting with single RCTs which may derive a false conclusion (Kunz et al., 1998).

Thornley and Adams (1998) confirmed that a single study is sometimes inadequate to detect the certainty of an intervention, differentiate between the effects of one, or to recognise the causal relationship between variables of treatments because of the small sample size of patients, which may inhibit the formation of true conclusions. This could be a medical hazard if healthcare decision makers base policies on erroneous data from single trials (Jadad and Enkin, 2007).

Based on the foregoing, SR can integrate more than one study and facilitate the drawing of more real, objective, transparent conclusion to support the evidence in making clinical decisions (Sackett and Wennberg, 1998).

From this standpoint, the tendency was to concentrate on SRs of RCTs and exclude other quantitative, qualitative or economic evaluation study designs (Dixon-Woods et al., 2004). On the otherhand, it has been debated that RCTs are not suitable for all circumstances (Dixon-Woods et al., 2004). For instance, if we want to explore the lived experiences of listening to music as a postoperative pain management intervention, the appropriate method to study that is through a qualitative design (phenomenology) (Greenland, 1987). Clearly, the worth of other reviews cannot be neglected because, they have a great influence in discovering the essential features of findings, which

can direct future research design and clarify current levels of knowledge (Sackett and Wennberg, 1998).

A closer look at the above will reveal that there are two main approaches of quantitative systematic reviews. The first is the SR of a single study design, which includes primary studies having the same study design (eg. RCTs). The second type is the systematic review, which summarises and combines the results from more than one study using statistical techniques and can sum up the outcomes of similar, but independent studies, to produce a single estimate of treatment effects (eg. Cohort studies) (Jadad and Enkin, 2007). This technique is called meta-analysis, which can provide a quantitative synthesis of the research.

One of the purposes of meta-analysis is to reduce the uncertainty or controversy, and to reduce the bias and increase precision of the conclusions of a review (Sackett and Wennberg, 1998). However, the use of meta-analysis method is not necessary in every single systematic review. For instance, if the characteristics of the included studies are dissimilar or questionable, it may be inappropriate or even misleading to statistically pool results to give a meaningless summary; in this case, a narrative summary should be presented (Jadad and Enkin, 2007).

A systematic review is considered to be a process to locate all studies for a specific purposeful question (drawn from research and other resources), critically appraise the methods of the studies, summarise the outcomes, present key findings, identify reasons for varied outcomes across the studies, and identify limitations of existing knowledge (Khan et al., 2003). In

other words, it is a tool to collect and assess all relevant research evidence giving informative, experimental answers to scientific research questions (Evans, 2001).

Systematic reviews are different from traditional literature/ narrative/ critical reviews (Khan et al., 2003).

Despite often being very helpful as background reading, they have a number of disadvantages. They differ from the systematic reviews in that they are subjective, and not guided by a peer-reviewed protocol, and as such cannot be replicated; moreover, those studies that support the author’s point of view are more likely to be selected (*Ravnskov, 1992). In addition, traditional narrative reviews may make different reviewers reach dissimilar conclusions from the same research bases (Teagarden, 1989). Thus, they appear lacking in rigorous scientific design to minimise the risk of biases or ensure reliability (Khan et al., 2003).

The systematic review overcomes the problems which traditional narrative reviews have, through making the review process obvious. In this way, it is possible for the reader to replicate the process of the review and establish the generality and transparency of scientific findings (Egger et al., 2001). Moreover, it also provides objectivity for information by summarising the results of otherwise unmanageable quantities of research (*Ravnnskov, 1992).

The rationale for undertaking a systematic review in the field of healthcare has been well established, according to Torgerson (1998) and is firmly embedded in the scientific paradigm. As the importance of EBP continues to

be promoted, the profile and acceptability of systematic reviews prosper, and a constantly expanding volume of data needs to be considered by practitioners and researchers. However, it is impossible to read, critically evaluate and synthesise the state of knowledge, let alone update this regularly (Egger et al., 2001). Thus, the systematic review has become an essential tool for keeping up to date with the new evidence accumulating in a field of study.

While reducing the ever-increasing torrent of published and unpublished research into manageable portions, Clarkson et al. (2003) explains that the systematic review also reduces both systematic errors (biases) and random errors (those occurring by chance). It provides a more objective, comprehensive view of the literature, which is of high quality and relevant to specific clinical practice. Yet clearly, this rationale does not exclusively apply to healthcare research.

Systematic reviews can also provide raw material for establishing clinical guidelines and help plan new research by identifying existing gaps (Pearson et al., 2005).

Clarkson et al. (2003) add that it can be used to formulate policy and develop guidelines on healthcare organisation and delivery. They are of particular benefit in areas of clinical uncertainty or where there is a wide variation in practice. Thus, healthcare providers, researchers and policy-makers can use systematic reviews to efficiently integrate existing information, providing data for rational decision-making.

Systematic reviews not only inform clinical decision-making, but also inform the research agenda. The comprehensive searching, appraising and synthesising of research literature does not guarantee a definitive answer to a scientific research question (Clarkson and Ismail, 2003). By identifying questions for which, at present, there is insufficient good quality evidence upon which to base clinical decisions, systematic reviews highlight areas requiring further research.

Conversely, the authors also point out that the results of systematic review may provide strong evidence regarding the benefits or harms of a particular intervention, and may actually preclude a new study from being conducted.

Based on the foregoing Cochrane’s work on evidence-based medicine (NHS Centre for Reviews and Dissemination, 2001), conducting a systematic review is a gold-standard procedure for assessing the effectiveness of music as a postoperative pain management intervention.

A systematic review is a piece of work / research that identifies relevant articles and synthesises the results obtained from the studies , critiquing them for their quality using a framework, possibly using a meta-analysis to help summarise the findings (Khan et al., 2003; Egger et al., 2001).

They are vital tools for the healthcare practitioner/ worker/ clinician because research accumulates quickly and systematic reviews summarise large amounts of research, helping to make the information more accessible and easier to understand and use (Egger et al., Parahoo, 1997). Systematic reviews provide a reliable summary of the available evidence and this helps make clinical decisions (Lancaster et al., 1997).

Reviews are a way of informing readers of patterns, strengths and limitations of the methodology used and this helps to make recommendations for future research (Parahoo, 1997).

All available evidence on a specific topic is collected, analysed and synthesised (Parahoo, 1997) and by combining the information and assessing them together it is hoped that a clear conclusion can be formed (Davies and Crombie, 2003; Lancaster et al., 1997).

Meta-analysis is often employed to collate primary research data from various critiqued articles and this can give an overall summary statistic or ‘ pooled estimate effect’ (Chalmers and Altman, 1995). Combining data from several primary studies increases the power of the result and hence allows readers to be more aware of the efficacy of the intervention (Chalmers and Altman, 1995; Lancaster et al., 1997).

Systematic reviews permit a more objective view/ appraisal of the research than narrative reviews and this helps to sort out disputes between different articles (Egger et al., 2001).

Narrative reviews are said to have lower quality than systematic reviews and several reasons are given for this by Egger et al., 2001.

Classical reviews are subjective so are susceptible to bias and error.

Systematic reviews have strict protocols whereas classical reviews do not necessarily have formal rules/ structure which may lead to error. Once studies have been identified, the author may only include studies that support their view rather than systematically looking at the evidence and the

characteristicis of the study to help form a conclusion. This explains why reviewers using the classical (traditional) methods may obtain different answers and miss small but potentially significant differences. This in turn may lead to conclusions from a reviewer being associated more with the qualification and specialty of the author/ researcher/ reviewer than the presented data particularly in controversial areas.

Systematic reviews are therefore more objective because all potentially relevant studies are gathered using a specific protocol, the results cna be tabulated and analysed, possibly using meta-analysis leading to a more objective appraisal which can help resolve uncertainties when study conclusions differ.

Systematic reviews can highlight any conflicts or inconsistencies in the research and this can be studied (Chalmers and Altman, 1995), hence, systematic reviews have been described as being at the top of the hierarchy of evidence (Davies and Crombie, 2003).

Implications from the ever expanding volumes of healthcare literature (Beaven and McHugh, 2003) means that, it is impossible for a clinician to access, let alone understand, the primary evidence that informs practice (Glasziou, Irwig and Colditz, 2001; Handoll et al., 2008). As a result of this, useful research studies and valuable findings are concealed and abandoned as a whole (Beaven and McHugh, 2003). Systematic reviews of primary studies are therefore an essential aspect of evidence-based healthcare for practitioners who want to keep up to date with evidence in making informed

clinical decisions (Lipp, 2005; Glasziou et al., 2001; Handoll et al., 2008; Schlosser/ FOCUS, 2010).

Commencing with a well-defined research question, such reviews utilise explicit methods to systematically identify, select, critically appraise, extract, analyse and synthesise data from relevant studies on a particular topic (Handoll et al., 2008; Petticrew and Roberts, 2006; Wright et al., 2007; Sackett et al., 2000). This process helps to minimise bias (Cook, Mulrow and Haynes, 1997), eliminate poorly conducted studies, confers power to the results that may not be given to individual studies (Lipp, 2005) and thus provide practitioners with reliable, valid and condensed evidence (Glasziou et al., 2001) in a considerably shorter period of time (Mulrow, Langhorne, and Grimshaw, 1997). Systematic reviews may involve the use of statistical methods (meta-analysis) (Handoll et al., 2008) in estimating the precision of treatment effects (Egger, Smith and O’Rourke, 2001).

Unlike traditional narrative reviews, systematic reviews allow for a more objective appraisal of the evidence and may thus contribute to resolving uncertainty when original research, and reviews disagree (Egger et al., 2001). By using an efficient scientific technique, systematic reviews also can counteract the need for further research studies and stimulate the timelier implementation of findings into practice (Lipp, 2005). They can also inform the research agenda by identifying gaps in the evidence and generating research questions that will shape future research (Eagly and Wood, 1994; Handoll et al., 2008; Lipp, 2005).

In spite of the numerous benefits of systematic reviews, they are not without challenges. Apart from being laborious (Petticrew & Roberts, 2006), they require expertise in the subject matter as well as the review process (Manchikanti, 2008).

Despite it being a rigorous, transparent methodology of search, appraisal, data extraction, retrieval, data synthesis and interpretation of the evidence from primary studies, there are limitations of early forms of SR methodology (associated with the ‘ hierarchy of evidence’ approach and advocated by the Cochrane movement) that are increasingly well recognised (Cooke et al., 1992). One of these limitations is that SR is a time-consuming process and it needs appropriate understanding of the research designs and methods together with knowledge of techniques for analysis, including statistical test (Gerrish and Lacey, 2006). Although the intention is to be systematic in the identification of studies and extraction of data, the systematic review process inherently has biases: of included studies, from poor search as well as publication related (Evans, 2001). In the same vein, language bias which exclude studies in languages other than English in the appraisal, in some way weaken the review as well (Evans, 2001).

It is important to identify the most appropriate research design to fit the question. A systematic review was chosen since the research aim is to summarise lots of data collected in primary studies, which requires a systematic approach.