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Validity and reliability of the Turkish version of the Optimality Index-US (OI-US) to assess maternity care outcomes

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ABSTRACT

Background: although obstetrical interventions are used commonly in Turkey, there is no standardized evidence-based assessment tool to evaluate maternity care outcomes. The Optimality Index-US (OI-US) is an evidence-based tool that was developed for the purpose of measuring aggregate perinatal care processes and outcomes against an optimal or best possible standard. This index has been validated and used in Netherlands, USA and UK until now.
Objective: the objective of this study was to adapt the OI-US to assess maternity care outcomes in Turkey.
Design: translation and back translation were used to develop the Optimality Index-Turkey (OI-TR) version. To evaluate the content validity of the OI-TR, an expert panel group ($n=10$) reviewed the items and evidence-based quality of the OI-TR for application in Turkey. Following the content validity process, the OI-TR was used to assess 150 healthy and 150 high-risk pregnant women who gave birth at a high volume, urban maternity hospital in Turkey. The scores between the two groups were compared to assess the discriminant validity of the OI-TR. The percentage of agreement between two raters and the Kappa statistic were calculated to evaluate the reliability.
Findings: content validity was established for the OI-TR by an expert group. Discriminant validity was confirmed by comparing the OI scores of healthy pregnant women (mean OI score=77.65%) and those of high-risk pregnant women (mean OI score=78.60%). The percentage of agreement between the two raters was 96.19, and inter-rater agreement was provided for each item in the OI-TR.
Conclusion: OI-TR is a valid and reliable tool that can be used to assess maternity care outcomes in Turkey. The results of this study indicate that although the risk statuses of the women differed, the type of care they received was essentially the same, as measured by the OI-TR. Care was not individualised based on risk and for a majority of items was inconsistent with evidence based practice, which is not optimal.
Implications for practice: use of the OI-TR will help to provide a standardized way to assess maternity care process and outcomes of maternity care in Turkey which can inform future research aimed at improving maternity care outcomes.

Introduction

Pregnancy and birth in healthy low risk women is a physiological event that does not require technological or obstetric interventions unless indicated by a change in their risk status. Studies conducted in Turkey have shown that technological and obstetric interventions, such as electronic fetal monitoring (EFM), intravenous therapy, labour induction, routine enema, epidural analgesia, amniotomy, bladder catheterization, episiotomy, and caesarean, are used at high rates despite evidence to the contrary. In a study conducted to evaluate antepartum and intrapartum care services at three different hospitals in Turkey (Ministry of Health hospital, Social Security Organization hospital, private hospital) by Turan et al. (2006), it was determined that episiotomy, enema, bladder catheterization, induction and vaginal exam were performed at high rates at the study hospitals. Güvenç (2004) found that continuous EFM was used

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commonly at three different hospitals (Military hospital, Ministry of Health hospital, Social Security Organization hospital) despite variations in risk status of the women. In another study conducted with 504 women by Şahin et al. (2007), it was determined that episiotomy was performed to 51.6% of primipara women and 48.4% of multipara women, thus half of the women giving birth in Turkey are experiencing a procedure that is rarely indicated. In Turkey, caesarean deliveries are very common with 48% of all deliveries being by caesarean section according to 2013 Turkey Demographic and Health Survey (TDHS-2013) with 52% of first births being caesarean deliveries (Hacettepe University Institute of Population Studies, 2014). Taken together maternity care in Turkey is medically intensive with high rates of intervention use that is not consistent with recommended evidence base practices. The Turkey Ministry of Health, in an attempt to address the high rates of non-evidence based practices in maternity care, published four evidence-based guidelines for managing antenatal care, vaginal birth and caesarean birth, urgent obstetric conditions and postpartum care (The Republic of Turkey Ministry of Health, 2009, 2010, 2014a, 2014b). Despite the guidelines, not all hospitals follow them. While these guidelines are mainly used in Ministry of Health hospitals, university and private hospitals use different maternity care protocols.

In Turkey, perinatal nurses and midwives are not able to exercise their independent roles completely because doctors manage the whole perinatal care process. They do not attend well to professional meetings which limits their knowledge about evidence-based maternity care. Access to evidence-based literature via the Internet or professional journals is also limited because of language barriers and not knowing how to access the data bases (Yava et al., 2008, 2007; Kocaman et al., 2010; Demir et al., 2012; Ay et al., 2014). Primary access to information about maternity care practices is through their hospital based employment and the setting protocols instead of being guided by the scientific evidence based guidelines. As a result there is wide variance in care practices used by nurses and midwives in Turkey that is dependent on their work setting and birth environment, not scientific evidence.

In Turkey, similar to many other countries, reported maternity care outcomes are generally limited to the incidence rates of morbidity and mortality for women and their newborns (e.g., preterm birth, low birth weight, maternal haemorrhage, or neonatal neurologic abnormalities). The sources of morbidity and mortality data in Turkey vary. The main sources are The Republic of Turkey Ministry of Health General Directorate of Health Research, Turkish Statistical Institute and Hacettepe University Institute of Population Studies. However, events reported are typically rare, particularly in healthy populations served by nurses and midwives. The outcomes reported also do not include the full range of birth experiences or focus on measures of optimal wellness of the mother and infant in Turkey. Currently there is no appropriate measurement tool to evaluate maternity care and outcomes in Turkey. One tool which has been used in the United States, the Optimality Index-US (OI-US) may be an appropriate assessment tool for Turkey because it combines commonly used health outcomes (e.g., mortality, low birth weight, and prematurity) with evidence-based care practices (medication use during labour, fetal monitoring, skin-to-skin contact, breast feeding, etc.) within one instrument (Low et al., 2008).

Literature review

The concept of optimality in childbirth was first described by Prechtl to identify infants with a 'perfect start in life' (Prechtl, 1968, 1980). He defined optimality as the best outcome with the least intervention (Prechtl, 1980). Subsequently, this concept was adapted by Wiegers and others to develop a tool to measure 'maximum outcome with minimal intervention' and was tested in the Netherlands by assessing the outcomes of midwifery care in a low-risk group of women (Wiegers et al., 1996). The instrument was then adapted by Murphy and Fullerton for use in the United States in 2001. This tool included the principle that evidence-based care reflects optimal care (Murphy and Fullerton, 2001). The Optimality Working Group (OWG), a group of researchers and clinicians in the United States, continued to modify the OI-US by reviewing high quality evidence-based studies until the OI-US was released for public use in 2008 (Fullerton et al., 2011). Recently, the OI-US was adapted for use in the United Kingdom by Sheridan and Sandall in 2009 (Sheridan and Sandall, 2010).

OI-US is a two-part instrument that comprises 56 items. The Perinatal Background Index (PBI) has 14 items, including information related to demographics, social history, and obstetric history, that can be used to categorise women based on their preexisting perinatal risks. A higher score indicates that the woman has low-risk social, medical and past obstetric history. The Optimality Index (OI) contains 42 items in four perinatal domains: pregnancy, parturition, neonatal condition and maternal postpartum condition. A lower outcome score indicates a deviation from optimal which is indicative the use of more intervention and or negative outcomes. Taken together, the OI-US combines the PBI score with the OI score to get a total OI-US score. The items are logically arranged within the perinatal domains but these domains are not individually sub-scored. The complete OI-US, coding guidelines, and instructions are provided on-line at http://www.midwife.org/Optimality-Index-US.

An optimality stance would support that the most sophisticated technologies are not needed for the majority of essentially healthy women during the childbearing year and that they would be more optimally served through care that is personalised and avoids technologic and obstetric intervention on a routine basis (Kennedy, 2006). In other words, the OI-US score is expected to be higher or more optimal with populations at low risk because the scientific evidence supports minimal intervention for women without preexisting risk factors (Low and Miller, 2006).

The optimality criteria used in the OI-US were derived from contemporary obstetric literature, particularly studies that evaluated the evidence-based effectiveness of care in pregnancy and childbirth. An optimal outcome is proposed for each item based on the best available current evidence. Optimality is operationalized by scoring the use of interventions as not optimal and the non-use of intervention, congruent with evidence based practice, as optimal. This is consistent with the definition of optimality as being the use of the least amount of intervention to promote the best outcome. This scoring does not measure whether the use of an intervention in an individual care circumstance is right or wrong but that it is not optimal to have had to use the intervention at all.

The measurement properties of this tool have been widely reported. Overall, content validity, predictive validity, discriminant validity and reliability have been evaluated and demonstrated for the OI-US (Murphy and Fullerton, 2001; Cragin and Kennedy, 2006; Low et al., 2008; Seng et al., 2005, 2008). The aim of the current study was to evaluate the confirm measurement properties of Optimality Index-Turkish (OI-TR) to assess maternity care outcomes in Turkey.

Methods

Study design

This study was performed in two phases. First, translation and back translation were used to develop the OI-TR version. Second,

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