Drug Assessment Instruments and Their Relevance with Women

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ABSTRACT

Reviews of literature reveal that there is recognition of the importance of development women-sensitive drug assessment instrument. However, validating existing drug assessment instruments with women and development of women-sensitive assessment tools remain in opaque areas for scholarly inquiry. The purposes of this paper are twofold: 1) to investigate outcomes of evaluation studies of existing drug abuse assessment instruments in woman population samples; 2) to examine the status of the empirical studies on psychometric properties among those instruments. This review investigates four drug assessment instruments including ASI, DAST, DUSI, and MMPI-s. A review of literature yields little evidence that research has been responding to ensure gender differences in drug assessment instruments. This study finding suggests the great demands of further research on validating existing drug assessment instruments and development of women-sensitive assessment instruments.

Keywords: drug assessment, women, evaluation studies

Women's substance abuse has been one of the major societal concerns in contemporary society. Evidence shows that more women than men are initiating cocaine and crack use in the US (Substance Abuse and Mental Health Services Administration, 1998). The rising trend in female drug abuse draws a great deal of public attention because of the high involvement of children's well-being, increasing recognition of women's unique experience with drug abuse, and its negative consequences when it combined with other problems such as poverty or domestic violence (Pagliaro & Pagliaro, 1999; Substance Abuse and Mental Health Services Administration,1998). As the growing interest and understanding of women's substance use and its negative consequences, the need to ensure women sensitive social work practice has been a concern of social work practitioners (Miller, 2001). However, there is still a dearth of knowledge about the incidence and prevalence and unique experience of substance abuse among women population. The lack of women sensitive assessment instruments plays a major role to prevent social work knowledge development on substance abusing women (Allen, 1994; Miller, 2001). Social work practitioners in various settings are facing greater challenges to accurately assess substance abusing women as it is a critical first step in providing appropriate services to women and their families. The determination of the extent and severity of drug use is a major challenge for researchers in carrying out research on substance abusing women's experience including incidence and prevalence and treatment-outcomes. With a better understanding of substance abusing women's experience, policymakers will contribute to removing unique barriers to get, retain, and complete treatments encountered by women and effectively prevent women's substance use. Reviews of literature reveal that there is recognition of the importance of development women-sensitive drug assessment instrument (Allen, 1994; Miller, 2001; Pagliaro & Pagliaro, 1999). However, validating existing drug assessment instruments with women and development of women-sensitive assessment tools remain in opaque areas for scholarly inquiry (Comfort, Zanis, Whiteley, Kelly-Tyler, & Kaltenbach, 1999; McCann, Simpson, Ries, & Roy-Byrne, 2000). In addition, most of the literature about women with substance-related disorders is about women with alcohol problems despite the different consequences and treatment needs (Zilberman, Tavares, & Andrade, in press). It is dyadic that little is known about psychometric properties of existing drug assessment instruments with women populations. It is also dyadic that few are developed to assess women's drug abuse. This paper aims at reviewing recent evaluation studies on substance abuse instruments that are

focusing on the drug with women sample. Therefore, the purposes of this paper are twofold: 1) to investigate outcomes of evaluation studies of existing drug abuse assessment instruments in woman population samples; 2) to examine the status of the empirical studies on psychometric properties among those instruments. The following sources were used to locate relevant literature about substance abuse assessment instruments: Eric, MEDLINE, PsychInfo, and Social Work Abstracts. Combinations of the following terminologies, "substance abuse," "substance abuse screening," "drug abuse," "drug test," "test validity," "test reliability," "substance abuse assessment," "gender", "women" and names of substance abuse instruments themselves were used to identify appropriate studies. The criteria of study selection were: (1) evaluations published after undergoing a peer review process in psychological, medical, sociological, and/or social work journal, (b) an empirical evaluation of testing psychometric properties with a women sample, and (c) a review of professional and accrediting organization standards.

The methodology has two limitations. First, the number of evaluation studies for each instrument varies due to a shortage of empirical literature on various instruments. Among reviewed 20 empirical studies, I included 6 studies for ASI, 8 studies for DAST, 3 studies for DUSI, and 3 studies for MMPI-2. Interestingly, I found a substantial amount of studies that did not report study participants' gender. Second, drug assessments that did not have more than two evaluation studies were not included. For example, Maternal Substance Use Screening Questionnaire is a 6-item psychometric assessment instrument designed by Kemper, Greteman, Bennett, and Babonis (1993) to detect both alcohol and other substance use among mothers. However, their validity and reliability have not been formally assessed.

Psychometric Properties of Drug Abuse Assessment Instruments. The psychometric properties of four drug abuse assessment instruments were reviewed in this study. Instruments include; Addiction Severity Index (ASI), Drug Abuse Screening Test (DAST), Drug Use Screening Inventory (DUSI), and Minnesota Multiphasic Personality Inventory (MMPI/ MMPI-2).

Psychometric Properties

Test-retest reliability

The test-retest deals with how consistent a measure is over time (Rubin & Babbie, 2000; Vogt, 1999). Test-retest reliability is based on testing the same examinees twice with the same test and then correlating the results. If the correlation between two observed scores to the instrument is above the .70 or .80 level, then the instrument is considered to have acceptable stability.

Inter-rater reliability

The inter-rater reliability assesses the extent of agreement, or consistency, between observers or raters (Rubin & Babbie, 2000; Vogt, 1999). To assess inter-rater reliability, calculating the percent of agreement or the correlation between the two sets of ratings are used. If there is more than 70% agreement, the inter-rater reliability of the instrument is acceptable.

Internal consistency

The internal consistency assesses the homogeneity of the measure(Rubin & Babbie, 2000; Vogt,1999). To assess internal consistency, we divide the single instrument into two halves, each of which contains an equal number of items, and then assess the correlation of the total scores of the two halves. The most common method of calculating internal consistency reliability is Coefficient alpha, which is the average of all possible split-half reliability.

Discriminant validity

A measure of the validity of a construct that is high when the construct fails to correlate with other constructs (Rubin & Babbie,2000; Vogt,1999). For example, to prevent the incidents that respondents may just be giving the answers they think are socially desirable, the researchers include questions that measure the construct "socially desirable responding." If the two measures were not correlated, the measure would have more discriminant validity.

Concurrent validity

This is a way of determining the validity of measure by seeing how well it correlated with some other

measure the research believes is valid (Rubin & Babbie, 2000; Vogt, 1999). Concurrent validity can be assessed by comparing a new measure with an already existing measure that has demonstrated validity within a given population. Construct validity Construct validity examines the extent to which variables accurately measure the construct of interest. In other words, it addresses the question of how well the variables are operationalized; of the operations really get at the things we are trying to measure (Rubin & Babbie, 1995; Vogt, 1999).

Drug Abuse Assessment Instruments

Addiction Severity Index (ASI)

The ASI is a semistructured interview developed to document current and lifetime problems commonly associated with substance abuse (Leonhard, Mulvey, Gastfriend, & Shwartz, 2000). Specific items are used to document demographic information and problem severity across seven domains of psychosocial functioning: (1) medical, (2) vocational, (3) alcohol (4) legal, (5) drugs, (6) family-social, and (7) psychiatric. The ASI is designed in a 45 minute to complete the initial assessment and additional 25 minutes to complete the follow-up version format. It is to be used by trained individuals and available in 17 different languages.

In Comfort, Zanis, Whiteley, Kelly, and Kaltenbach (1999)'s study, good inter-rater reliability (coefficient range from .91 to 1) and concurrent validity of ASI was found with 38 women who enrolled in or applying substance abuse treatment. Good internal consistency was also reported for six domains (coefficient range .75 to .91), but the coefficient of the family/social domain was not acceptable (alpha= .52). The average of the women in the study was 30.7 years and racially 47 % were Caucasian, 40 % were African American, and 13 % were Puerto Rican Hispanic. Among the samples, 16 % of families were currently involved in child protection services. As table 1 shows, except the study from Comfort et al. (1999), the other five studies used mixed gender samples with the female to male ratio of 1:4. Among those mixed gender evaluation studies, only one study differentiated results by gender while others failed to separate results. Hodgins and Elguebaly (1992) studied 152 psychiatric outpatients including 56 female and found moderate internal consistency (mean Cronbach's alpha=.68). However, study results indicated that the mean score for female was substantially lower than men (men for .68 and female for .45) and women's score was not acceptable. Other studies exhibited favorable internal consistency, test-retest reliability, inter-rater reliability, and good validity including discriminant, convergent, concurrent, and construct validity (Drake, McHugo, & Biesanz, 1995; Zanis, McLellan, & Corse,1997; Dyson, Appleby, Doot, Luchins, & Delehant,1998; Leohard, Mulvey, Gastfriend, & Shwartz, 2000).

Drug Abuse Screening Test (DAST)

The DAST is a 28 item self-administrated screening instruments developed by Skinner (1982). The DAST items yield a quantitative index of the range of problems related to drug abuse with a total score ranging from 0 to 28. A cutoff score of 5 or more indicates a probable drug use disorder. In addition, the DAST-20 that is a 20 item and the DAST-10 that consists of a 10 item is available. As table 2 shows, I found one evaluation studies with only women samples and seven other studies with mixed gender samples. Saltston, Halliwell, & Hayslip (1994) investigated the internal consistency of DAST with 318 female offenders who were in jail or on probation and reported good internal consistency (Cronbach's alpha=.88). Studies testing psychometric properties of DAST included almost equal numbers of women with a female to male ratio of 1: 1.2. However, no studies differentiated findings by gender. Overall, results suggested that the DAST yields reliable and valid assessment data (Staley & el-Guebaly,1990; El-Bassel, Schilling, Schinke, Orlandi, et al;1997; Cocco & Carey,1998; Dyson, Appleby, Doot, Luchins, & Delehant; 1998; Maistro, Carey, Carey, Gordon, & Gleason, 2000; McCann, Simpson, Ries, & Roy-Byrne, 2000).

Drug Use Screening Inventory (DUSI)

The DUSI is a 149 item self-administrated instruments to quantify the severity of problems. The DUSI is designed in a 20 minute to complete the multidimensional assessment. The measurement domains are: (1) substance use; (2) health status; (3) psychiatric disorder; (4) behavior patterns; (5) work adjustment; (6) school adjustment; (7) family system; (8) peer relationships; (9) social competence; and (10) leisure and recreation. Table 3 shows the evaluation studies on DUSI. Tarter and Kirisci (1997) and Kirisci, Tarter, and Hsu (1994) investigated psychometric properties of DUSI for adult and adolescent, respectively. However, no studies differentiated findings by gender. First, in the recent study of Tarter and Kirisci (1997), 238 adults including 119 samples with lifetime Psychoactive

Substance Use Disorder and 119 samples with non-PSUD were studied. The sample consisted of 123 female and 115 male. They found that high discriminant and construct validity and high internal reliability for both female and male (the average reliability coefficient was .76 for males and .72 for females). The other study indicated moderate internal reliability (Overall average reliability was .72 ranged from .53 to .81) with 846 adolescents including 448 female (Kirisci, Tarter, and Hsu, 1994). De Micheli and Formingoni (2000) studied 100 Brazilian adolescents including 51 female and found good concurrent validity.

Minnesota Multiphasic Personality Inventory (MMPI/ MMPI-2)

Although the MMPIs (MMPI and MMPI-2) are originally designed for the assessment of personality, they are often used to assess a full range of psychopathology, including substance abuse (Tarter & Hegedus,1991). The MMPI-s has three subscales that are used to measure substance abuse problems: The MacAndrew Alcoholism Scale-Revised (MAC-R), the Addition Acknowledgement Scale (AAS), and the Addiction Potential Scale (APS). The MMPI-2 is a self-report questionnaire that consists of 567 true/false questions. As table 4 shows, no study was found with only women samples, but samples of reviewed studies were predominantly female with a female to male ratio of 2:1. Despite women dominant samples, studies failed to differentiate study findings by gender. Results are contradictory depends on the characteristic of samples. Rouse, Butcher, and Miller (1999) studied 460 samples in outpatient psychotherapy (271 female and 189 male) and found good discriminant validity with classification ratio=.80, sensitivity (percentage correctly identified as being substance abuser) =.71 and specificity (percentage correctly identified as not being substance abuser)=.82. The majority of samples of Rouse, Butcher, and Miller's study were well educated (69.1 % of samples received more than high school education), self-referred (33. 3. %) and whites (90. 4 %). Other two reviewed studies focused on university student samples with a female to male ratio of 2: 1 (Svanum, & Ehrmann, 1992; Svanum, McGrew, & Ehrmann,1994). Studies failed to report findings by gender and results exhibited poor discriminant validity.

Discussion

This study results revealed that only two evaluation studies (one for ASI and one for DAST) found to be women-only samples. Among studies with mixed gender samples (a female to male ratio of 2:3), only two studies distinguished study findings by gender. Clearly, substance abusing women, although recognized as a distinct group from their male counterparts, are still treated as same and gender differences have not been counted on in existing evaluation studies. The lack of women sensitive evaluation studies potentially enlarges the gender bias and little relevance to female substance-abusing among current drug assessment instruments. Validating current drug assessment instruments for substance abusing women is an imperative task for researchers.

The study also finds that the importance of identifying subgroups of substance abusing women has not been acknowledged in the literature. Understanding the differential clinical and background profiles of these individuals is important to optimize matching the available treatments, as well as devising and implementing strategies to facilitate their entry and retention in treatment. However, all studies including evaluation studies with only women sample are treated women as a homogeneous population with similar backgrounds and treatment needs. Nonetheless, recent evidence suggests that substance abusing women vary in terms of ethnicity, income, education, and age and have distinct profiles with possibly different treatment needs(Miller,2001;Pagliaro&Pagliaro,1999). Exploring and differentiating the contribution of distinct profiles among subgroups within substance abusing women is in a critical need. Especially, evaluating how sensitively the existing drug assessment instruments appreciate the culture and history of minorities is crucial because lack of appreciation for cultural and historical sensitivity often yields biased information, masks important relationships in the decision-making process, thus, even harms women's welfare. This recommendation could be actualized through conducting research on the various drug assessment instruments already in place to determine which factors predict substance abuse among difference populations

One major finding from this review is that many existing drug assessment instruments have not been evaluated since 1990. Many other existing drug assessment instruments' performance is unknown, especially with women samples. Furthermore, the study results showed that the research efforts have been disproportionately focused

on particular instruments such as ASI and DAST. In addition, the study resulted that few instruments were fully investigated their psychometric properties including both reliability and validity.

The study results raised two methodological issues in evaluation studies on drug assessment instruments. The first methodological issue is the lack of uniformity in methodology. Based on the study results, seemingly, there is no agreement regarding methodology to examine reliability or validity. For example, many studies used correlation coefficient in measuring inter-rater reliability while few studies used Cohen's Kappa.Compared with Cohen's Kappa, correlation coefficient has been criticized to be misleading because high correlation does not necessarily mean actual agreements among raters (Rubin & Babbie,2000). Accordingly, it is not easy to conclude that one instrument has better inter-rater reliability than instruments due to the lack of methodological uniformity. The differences in methodology make it harder to compare performances among different drug assessment instruments. The second methodological issue is indiscriminate types of drugs in the existing drug instruments. Previous studies indicated the great diversity in patterns of use and clinical features associated with types of drugs. However, this study found that all evaluation studies ignored the subtypes of drugs. There is a great need for assessment to cover many drugs individually.

Conclusion

A review of literature yields little evidence that research has been responding to ensure gender differences in drug assessment instruments. This study finding also suggests the great demands of further research on validating existing drug assessment instruments and development of women-sensitive assessment instruments. The subgroup differences among substance abusing women require further attention.

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