

# Two Alcoholisms: Abuse And Dependence: Nosology issues from the Epidemiological studies of Alcoholism in Korea

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**Abstract:** This article, (1) reviews nosological issues of the distinction between alcohol abuse and alcohol dependence; (2) discusses the Korean epidemiological trends of alcohol abuse and alcohol dependence. Psychiatric epidemiological studies of Korean population that provided clues to the validity and cross-cultural applicability of alcohol abuse and alcohol dependence were reviewed. Alcohol use disorder has been the most common mental disorder in Korea. However, during the last 20 years, the prevalence rates of the two alcohol use disorders have grown in opposite directions. The lifetime prevalence rate of alcohol abuse has fallen from 12.06% to 7.11%, conversely, the lifetime prevalence rate of alcohol dependence has slightly increased from 9.92% to 10.20%. Nosological issues, such as the vulnerability of alcohol abuse to social environments, the hierarchical structure of the DSM-IV and the prevailing Korean concepts of abuse and dependence, were reviewed as factors to be considered in explaining these findings. Alcohol dependence outranks alcohol abuse and is now the main alcohol use disorder in Korea. But, there are still nosological issues that need to be assessed and considered, such as the validity of alcohol dependence in subpopulations and the heterogeneity of the DSM-IV alcohol dependence category.

**Key words:** Alcoholism, Dependence, Abuse, Epidemiology, Korea

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## Introduction

Over the past 20 years, two nationwide epidemiological studies of mental disorders in Korea have greatly expanded our understanding of the prevalence of mental disorders. The first nationwide Korean epidemiological study of mental disorders<sup>1</sup> was surveyed in 1984 among 5100 adults, 18 to 64 years of age, using the Korean version of the Diagnostic Interview Schedule<sup>2</sup>. It provided the first estimates of mental disorders according to the 3rd edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III)<sup>3</sup>. This study was followed by the Korean Epidemiologic Catchment Area (KECA) Study for Psychiatric Disorders<sup>4</sup>, 17 years later in 2001, which was designed to update information on prevalence rates of mental disorders in the Korean population, using the Korean version of the Composite International Diagnostic Interview<sup>5</sup> based on the DSM-IV<sup>6</sup>. Although the study designs, diagnostic criteria, and case identification methods differ somewhat, both surveys discovered the most common lifetime mental disorder is alcohol use disorder in Korea. However, upon further comparison of the results of these two studies, the prevalence rate and distribution of alcohol use disorder significantly changed during the time between the surveys. First of all, the lifetime prevalence rate of alcohol use disorder decreased significantly from 21.98% in 1984 to 17.24% in 2001. This fall in prevalence is more dramatic in alcohol abuse.

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The lifetime prevalence of alcohol abuse was 12.06% in 1984, but dropped to 7.11% in 2001. On the contrary, the lifetime prevalence rate of alcohol dependence slightly increased from 9.92% to 10.20%, during the same period, respectively. Both classified as alcohol use disorders, the prevalence rates of alcohol abuse and alcohol dependence have grown in opposite directions during the last two decades in Korea. There are many alternative explanations for these findings, including the social-cultural change of the Korean society. However, the methodological issues of nosology, and the DSM distinction between alcohol abuse and alcohol dependence, need to be reviewed before any conclusive remarks can be drawn.

Psychiatric nosology has been limited by the heavy reliance on manifestational criteria rather than causal criteria. Reliance on manifestational criteria in the absence of convincing causal factors increases the likelihood that heterogeneous groups will be assigned the same diagnosis. The relatively new descriptive approach to psychiatric nosology is an important intermediate stage that will facilitate more rigorous investigations of causal factors in clinical and epidemiological studies. Fundamental categories such as major depression and schizophrenia had not change markedly since the DSM-III, partly because reliability and validity data for these categories had been accumulating since the 1970s. In contrast, the criteria for alcohol abuse and alcohol dependence changed markedly from the DSM-III to the DSM-III-R. The changes in alcohol abuse and alcohol dependence, since the DSM-III through the DSM-III-R and the DSM-IV, stimulated many reliability and validity studies of the DSM distinction between alcohol abuse and alcohol dependence.

Although there have been only few studies that have assessed this issue in Korea, the nosological issues of alcoholism have been mostly covered as a part with the Korean epidemiological studies of alcoholism. This article, (1) reviews the nosological issues of the distinction between alcohol abuse and alcohol dependence in Korea; and then (2) discusses the Korean epidemiological trends of alcohol abuse and alcohol dependence.

## Methods and Materials

We performed a keyword-driven computerized MEDLINE search to identify relevant studies for inclusion in

our review. In addition, we searched the reference lists of prior reviews of alcohol use disorders to identify any results that were not retrieved in the MEDLINE search.

## Results

Korea has been known as one of the countries in which the prevalence of alcoholism is high, together with the former Soviet Union, France, Scandinavia and Ireland<sup>7</sup>. This association was originally characterized in cross-cultural studies held during the 1980s, when highly structured interviews based on definitional criteria were first used in the fields of mental disorder epidemiology. Helzer et al<sup>8</sup>. compared populations of five different countries, including a Korea population, using the Diagnostic Interview Schedule<sup>9</sup> based on the DSM-III, and found that whereas schizophrenia has a consistent cross-cultural prevalence, alcoholism prevalence varies with cultural context. Among the cross-cultural findings, there was a dramatic difference in the prevalence rates between Korea and Taiwan, both Asian countries. The Asian countries were assumed to have lower prevalence rates compared to western countries due to the Confucian moral ethic and the alcohol-related flush in Asians. However, the Korean findings demonstrated that not all Asian countries had a low lifetime prevalence of alcoholism. These comparisons were accomplished using the DSM-III definitions of alcohol abuse and alcohol dependence.

### 1. DSM-III: 1st Distinction between Alcohol Abuse and Alcohol Dependence

There has been a steady progression in the Diagnostic and Statistical Manual published by the American Psychiatric Press. Both the first and second editions gave a listing of diagnostic labels and brief descriptions of the typical features of major illnesses, but neither provided specific diagnostic criteria. Patterned after the Feighner diagnostic criteria<sup>10</sup> which were developed mainly for research purposes, the DSM-III provided a set of operational definitions in which symptom requirements were carefully specified for each diagnosis. Illness boundaries were also defined, as well as a hierarchy of diagnoses for patients who met multiple definitions. By the early 1980s, the need for precise diagnostic definitions had

become widely recognized. Therefore, the DSM-III received rapid acceptance not only in the United States but also internationally<sup>11</sup>. The DSM-III was the first classification system intended for clinical as well as research use that included specific diagnostic criteria for the major disorders. But, more applicable for alcohol researchers, the DSM-III was also the first classification system to present criteria for the two alcohol use disorders: alcohol abuse and alcohol dependence. The classification systems published prior to 1980 included only one alcohol use disorder: alcoholism.

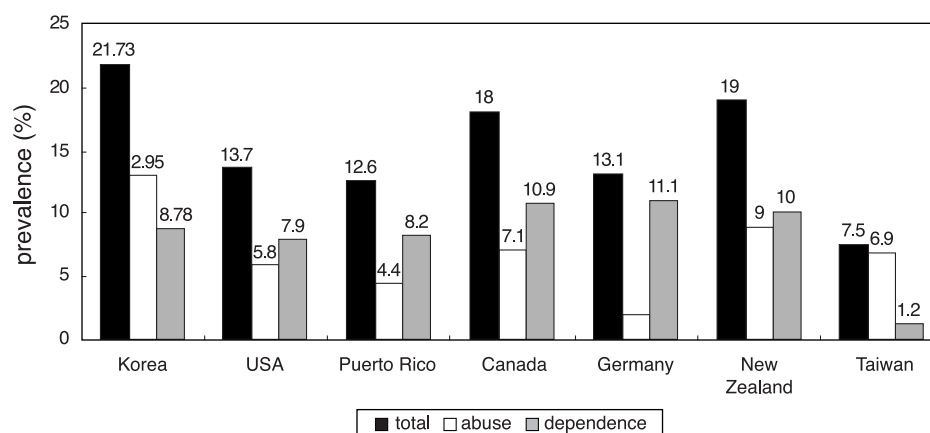
The DSM-III criteria for alcohol abuse included the following behaviors: (1) Patterns of pathological alcohol use including the need for daily use of alcohol for adequate functioning; an inability to cut down or stop drinking; repeated efforts to control or reduce excessive drinking to certain times of the day; binges; the occasional consumption of a fifth of spirits; amnesic periods for events occurring while intoxicated; the continuation of drinking despite a serious physical disorder that the individual knows is exacerbated by alcohol use; and drinking of non-beverage alcohol. In addition, according to the criteria, persons with alcohol abuse show. (2) Impairment in social or occupational functioning as a result of alcohol use, such as violence while intoxicated, absence from work, loss of job, legal difficulties (e.g. arrest for intoxicated behavior or traffic accidents while intoxicated); and arguments on difficulties with family or friends because of excessive alcohol use. A duration criterion at least 1 month of these problems was also required for the DSM-III alcohol abuse diagnosis.

The DSM-III criteria for alcohol dependence required either tolerance or withdrawal, in addition to one of the criteria listed for alcohol abuse. In the Diagnosis Interview Schedule, tolerance was defined as there having been a period of 2 weeks of drinking seven or more drinks everyday; and withdrawal was defined as needing a drink just after having got up (i.e. before breakfast) and any of the following symptoms after cessation or reduction in drinking: tremor, seizures, DT, and seeing or hearing things that are not really there. However, there was no published rationale given for this division into abuse and dependence or for the allocations of symptoms into subcategories.

## 2. Early Epidemiological Studies in Korea according to the DSM-III

The first nationwide epidemiological study of Koreans, surveyed in 1984, revealed the first estimates of alcoholism according to the DSM-III. The descriptive findings of alcoholism in Korea showed some distinctive features and immediately drew the attention of alcohol researchers. Besides the high prevalence rate of alcoholism as mentioned above, Lee et al<sup>1</sup>. and Helzer et al<sup>8</sup>. pointed out a few more characteristics. First, the male female ratio is high. The sexual differential usually correlates with the prevalence rate; in other words the female prevalence rate increases as the population prevalence rate increases. However in Korea, despite the high prevalence rate of alcoholism, the male female ratio was still high. Double standards of drinking that judge alcohol use more harshly for women than men had been reported in many cultures and this stigmatization might be greater in highly gender-differentiated societies like Korea. Second, the age distribution is older. Most of the countries showed a fall in prevalence rate with age, which was viewed as an age cohort effect; namely, alcoholism becomes more prevalent in younger persons. However, the prevalence rate in Korea increased with age. when considering the cumulative effect of lifetime prevalence, alcoholism continued to the seventh decade of life in a significant portion of the Korean subjects. Third, the abuse dependence ratio is reversed compared to Western countries (Figure 1). Despite the large differences in prevalence and differences in a cultural context, the expression of relative frequency of the 21 DIS symptoms were similar between countries and the rank order correlation was remarkably high. But it is interesting that the prevalence of alcohol abuse outranked the prevalence of alcohol dependence only in Korea and Taiwan. The authors assumed that the alcohol dependence among Korean men is less prevalent than alcohol abuse because of social sanctions that continue to exercise roles even where alcohol consumption is high.

One of the early epidemiological studies in Korea showed another striking finding related to the distinction between alcohol abuse and alcohol dependence. Namkoong et al<sup>12</sup>. compared the results of two community surveys, one from Kangwha, Korea<sup>13</sup> and other from Yonbian, China<sup>14</sup>. Both surveys used the Korean version



**FIGURE 1.** Comparison of lifetime prevalence of alcohol abuse and alcohol dependence (Reprinted from Lee CK et al.: A nationwide epidemiological study of Mental Disorders in Korea (15)- Prevalence of Alcoholism: J Korean Neuropsychiatry Assoc 1994; 33 (4) p.840)

of the Diagnosis Interview Schedule-A<sup>15</sup> according to the DSM-III. The Yonbian Korean Autonomous Prefecture was located in the northeast of China, where at that time about 2 million Koreans lived, mostly the descendents of 19<sup>th</sup> century migrants from Korea. They shared an identical genetic background with Koreans in Korea, but had been living in China with greatly different cultural backgrounds.

The authors found a significant difference in the prevalence of alcohol abuse defined by the DSM-III between the two study samples, but the prevalence of alcohol dependence was similar (Table 1). An etiological hypothesis was proposed for alcohol abuse and alcohol dependence on account of their differential prevalences. The reason for the higher prevalence of alcohol abuse in Kangwha might have been due to the differential effect of economic and social changes in these two areas. Since

**TABLE 1.** Comparison of lifetime prevalence rates of alcohol use disorder between Kangwha and Yanbian (Reprinted from Namkoong et al.: Cross-Cultural Study of Alcoholism: Comparison between Kangwha, Korea and Yanbian, China. Yonsei Medical Journal 1991; 32 (4) p.322)

	Kangwha, Korea (%)	Yanbian, China (%)	Significance
	N=1450	N=1532	*P<0.5
Alcohol Abuse	16.48	6.95	*
Alcohol Dependence	10.23	11.51	
Without Abuse	1.13	2.82	*
With Abuse	9.10	8.69	
Total	26.71	18.46	*

the prevalence of alcohol dependence was not different between these two areas, it may be hypothesized that alcohol abuse and alcohol dependence are two stable diagnostic categories of different disorders. Etiologically, alcohol abuse was more strongly related to socio-cultural environment, and alcohol dependence was more free from the effect of socio-cultural influence. These findings were consistent with the preceding findings of Taiwanese. Hwu et al<sup>16</sup>. compared the metropolitan area with the rural area of Taiwan by using a modified Chinese Diagnosis Interview Schedule and reported similar patterns. There was a significant difference in the prevalence of alcohol abuse between the two study samples (metropolitan 3.4%; rural 8.0%), but the prevalence of alcohol dependence was not different (metropolitan 1.5%; rural 1.8%).

However, in spite of the possible etiological differences, the clinical and social outcomes of the alcohol abuse and alcohol dependence did not greatly differ in these studies and the clinical significances of the DSM distinction were challenged. Namkoong et al<sup>17</sup>. explored the clinical significance of the DSM-III distinction of alcohol abuse and alcohol dependence by comparing the demographic characteristics, natural course and frequencies of the DIS alcoholic symptoms among an 'alcohol abuse' group, an 'alcohol dependence' group and a 'non-alcohol use disorder' group to those of subjects that were included in the Kangwha Epidemiological Survey<sup>14</sup>. There were no significant difference in the natural course, such as the mean age of the first heavy drinking

episode or the onset of alcoholic symptoms and latency period. Only the mean duration of disorder was significantly longer in 'alcohol dependence' group ( $13.5 \pm 12.2$  yrs) than 'in the alcohol abuse' group ( $9.2 \pm 10.8$  yrs). The differences of symptomatology between alcohol abuse and alcohol dependence were merely in quantity and not quality as the pattern and the rank order were similar; just 3 out of 21 symptoms were significantly frequent in the dependence group: 'think of oneself as a excessive drinker', go on a 'bender for at least 2 days', 'continue to drink even with serious physical illness'. These results were not sufficient to support the clinical significance of the DSM distinction between abuse and dependence; consequently, the authors suggested alcohol dependence might be just an advanced form of alcohol abuse.

### 3. Limitations of the DSM-III

The questions over the distinction between abuse and dependence were raised by a common clinical conceptualization of alcohol abuse being a 'prodromal' state or an early mild stage of alcohol dependence rather than being a condition that is distinct from dependence. A study<sup>18</sup> that intended to determine whether the course of alcohol abuse differs from the course of alcohol dependence, failed to support the prognostic implications for the differentiation between alcohol abuse and alcohol dependence.

Difficulties with the DSM-III distinction between alcohol abuse and alcohol dependence were summarized in two issues<sup>19</sup>: (1) Problems using the social and occupational consequences to define alcohol abuse; (2) Weakness of tolerance or withdrawal as a required criterion for alcohol dependence. The problems using social or occupational impairment to define alcohol abuse made the DSM-III distinction too vulnerable to powerful, swiftly changing social forces, such as the tightening of laws restricting alcohol use while driving. Thus, for an extreme case, legal actions of a government in a particular state (region) could determine the number of residents who meet the DSM-III criteria for alcohol abuse. Another problem using social or occupational impairments to define alcohol abuse was that evaluating the social consequences could be difficult in practice because of an unclear temporal relationship between the onset of heavy alcohol use and the onset of social

impairment. Requiring social impairment may miss many individuals in whom pathological compulsive alcohol use is present but of whom social impairment has not yet been detected. Although social consequences are frequently a motivation to seek treatment, using social consequences as diagnostic criteria for a disorder might unnecessarily blur the distinction between the disorder itself and its consequences. The second issue being the weakness of tolerance or withdrawal as a required criterion for alcohol dependence lies on the reality that different patterns and amounts of tolerance may develop across different categories of drugs (e.g. marked tolerance to opiates, minimal and reversed tolerance to alcohol) and the nonspecific withdrawal symptoms associated with abstinence from most substances. These challenges to the validity of the DSM-III distinction led to a considerable reversion of the alcohol use disorder category in the DSM-III-R<sup>20</sup>.

### 4. DSM-III-R: Alcohol Dependence Syndrome

The DSM-III-R did not represent a conceptual advance for most diagnostic categories but served mostly as an opportunity for fine-tuning the DSM-III. The main exception was the category for alcohol use disorder. The alcohol use disorder category underwent a substantial reorganization in the DSM-III-R. The major advantage of the DSM-III-R over the DSM-III was that the criteria of alcohol dependence were based on a well-defined theoretical rationale derived from a published concept known as the 'Alcohol Dependence Syndrome'<sup>21, 22</sup>. The Alcohol Dependence Syndrome (ADS) was explained primarily in terms of operant conditioning and the reinforcement process. The cardinal feature of the syndrome was impaired control, and a combination of physiological and psychological processes that influence the development and maintenance of addictive behaviors were reflected in the criteria. The seven elements described included: 1) Narrowing of the drinking repertoire; 2) Salience of drink-seeking behavior; 3) Increased tolerance to alcohol; 4) Repeated withdrawal syndrome; 5) Relief or avoidance of withdrawal symptoms by further drinking; 6) Subjective awareness of a compulsion to drink; 7) Reinstatement after abstinence. It was argued that not all elements may be present in every case, but the picture is sufficiently regular and coherent to permit clinical recognition. The Alcohol Dependence Syndrome

clearly differentiated between the dependence process itself and the social, legal and other consequences of heavy drinking, a distinction known as the ‘biaxial concept’<sup>23</sup>; with alcohol dependence forming one axis, and other alcohol related consequences or disabilities lying on the other axis. The biaxial concept can be interpreted as suggesting a distinction between alcohol abuse and alcohol dependence in the classification of alcohol use disorders.

In the DSM-III-R, social consequences were removed and the alcohol dependence category was composed of nine criteria of pathologic use, three of them were required to make a diagnosis. Tolerance and withdrawal symptoms were retained as indices of dependence, but far less emphasis was placed on these physical symptoms. The workup group originally intended to include only alcohol dependence in the DSM-III-R, but concerns that some subgroups might be undiagnosed without an additional category led to the inclusion of alcohol abuse in the final set of the DSM-III-R criteria as a residual category that was to be used only among people who did not meet the criteria for alcohol dependence<sup>24</sup>.

### 5. DSM-IV and ICD-10

The current edition, DSM-IV<sup>6</sup>, came only 7 years later in 1994. The transition from the DSM-III-R to the DSM-IV reflected a much more conservative process. A concern that the DSM-III-R definition of alcohol dependence had been too broad, whereas alcohol abuse had been defined too narrowly, led to some restriction on the DSM-IV dependence category and the subsequent addition of criteria to the DSM-IV abuse category<sup>24</sup>. Meanwhile, the work on the DSM-III-R and the DSM-IV influenced the definitions of the psychiatric and alcohol use disorders included in the WHO classification system, and efforts were made to coordinate the ICD-10<sup>25</sup> research criteria with those of the DSM-IV, although some differences still exist.

The Alcohol Dependence Syndrome was the basis for the ICD-10 alcohol dependence criteria. In the ICD-10, the secondary alcohol category was called harmful use, and it allowed problem drinking that leads to medical problems to be diagnosed in the absence of dependence. The DSM-IV and the ICD-10 cover similar content for alcohol dependence<sup>24</sup>: 1) Tolerance; 2) Withdrawal; 3) Impaired control; 4) Neglect of alternative pleasure

activities; 5) Time spent in alcohol-related activity; 6) Continuance despite problems; 7) Compulsion. Whereas the criteria slightly differ between the DSM-IV and the ICD-10, each system requires that at least three criteria be met for the alcohol dependence diagnosis to be made. The definitions of alcohol dependence in both systems include tolerance and withdrawal, the physiological indicators of dependence, among the criteria. In contrast, these physiologic symptoms are not required for an alcohol dependence diagnosis using the DSM-III system. The criteria for abuse/harmful use in the DSM-IV and the ICD-10 show greater variation than those for dependence; however, an important commonality of abuse/harmful use across the classification systems is that abuse/harmful use cannot be diagnosed in a person who meets criteria for alcohol dependence. Hence, alcohol abuse/harmful use is a residual category for the DSM-IV and the ICD-10. There is a difference in that the DSM-IV excludes a diagnosis of abuse in a person who was ‘ever dependent’, whereas the ICD-10 does not limit a later diagnosis of harmful use in a person who was formerly dependent.

All the DSM-III-R, DSM-IV and ICD-10 definitions of alcohol dependence were developed from the concept of the Alcohol Dependence Syndrome<sup>22</sup>, and thus have a common theoretical link. However, this link is not shared by the DSM-III; furthermore no link exists between definitions of alcohol abuse in the different classification systems.

### 6. Validity of the DSM-IV and ICD-10

The DSM-IV emphasized the importance of reliability and validity evidence as a basis for decision-making and provided an opportunity to use data from clinical studies to examine aspects of reliability and validity. Thus, this latest reversion of the DSM was based on a more solid empirical foundation. The validity research is complex because there are presently no widely accepted biological tests, or ‘gold standards’, to use as the benchmark of the validity of specific diagnostic measures. To improve the precision of research studies, alcoholism researchers are actively seeking what are called biological endophenotypes. These sets of characteristics would consist of psychophysiological measures that indicate the presence or severity of the disorder. However, such endophenotypes have not yet been firmly established and evidence

was thus inferred from specific validation strategies.

Several longitudinal studies<sup>26, 27, 28, 29, 30</sup> addressed the stability and distinctiveness of the course of alcohol abuse and alcohol dependence and consistently showed that dependence is likely to remain chronic, while abuse is likely to remit and unlikely to progress to dependence. These findings support the validity of dependence and its distinction from abuse. There have been no longitudinal predictive studies in Korea to determine whether the course of alcohol dependence differs from alcohol abuse; however, there have been some multi-method comparison studies as a part of the development of Korean versions of diagnostic instruments, such as the Composite International Diagnosis Interview<sup>31</sup>. When different assessment methods agree well in identifying cases of a given condition, this supports the validity of the condition<sup>24</sup>. Multi-method studies have compared either the results of different diagnostic instruments (CIDI and SCAN) or the results of different classification systems (DSM-III-R and ICD-10). Namkoong et al<sup>31</sup>. examined the diagnostic concordance between clinical diagnoses and the Korean version of CIDI-Alcohol assessment on the same subjects (90 psychiatric inpatients and 50 normal subjects) and compared the results of the DSM-III-R and the ICD-10. The results indicated fair agreement for both alcohol dependence (DSM-III-R) and dependence syndrome (ICD-10), but the kappa coefficient was lower for alcohol abuse (DSM-III-R) and harmful use (ICD-10). When the authors strengthened the criteria the results were improved. The kappa value of harmful use (ICD-10) increased from 0.43 to 0.58, and the kappa value of alcohol dependence (DSM-III-R) also increased from 0.52 to 0.56. The authors suggested that the source of validity problems was based on the high false positive rate of the CIDI-Alcohol assessment. Cho et al<sup>5</sup>. compared the results of the DSM-IV on the same subjects (135 psychiatric patients and 5 community residents) by the Korean version of the CIDI and the Korean version of the SCID (Structured Clinical Interview for DSM-IV). The kappa value (0.73) indicated good validity for alcohol dependence. (Alcohol abuse could not be estimated due to small sample size). Other cross-method comparison studies<sup>32, 33, 34, 35, 36</sup>, including the studies from the WHO/NIH joint project that compared joint assessments of the DSM-IV or the ICD-10 on the same patients as assessed by the CIDI, SCAN (Structured Clinical

Assessment for Neuropsychiatry) and AUDADIS (Alcohol Use Disorders and Associated Disabilities Interview Schedule), indicated nearly excellent agreement for alcohol dependence, thus supporting the validity of this diagnostic category. However, cross-method agreement was consistently lower for abuse (DSM-IV) or harmful use (ICD-10).

Studies have consistently indicated good validity for alcohol dependence. In contrast, the results for alcohol abuse were quite disappointing. This condition suffers from a number of factors that would lead to poor validity<sup>32</sup>. They include (1) Poor reliability; (2) A hierarchical relationship to alcohol dependence that makes the abuse diagnosis conditional on the diagnosis of dependence, that is measured well, but not perfectly; (3) A variety of views on the proper definition and role of alcohol abuse in the nomenclatures; and (4) A prevalence that is often low because the alcohol dependence category is fairly broad and pre-emits the alcohol abuse diagnosis when both are present.

## **7. Cross-Cultural Applicability of the DSM-IV and the ICD-10**

The DSM-IV and the ICD-10 commonly provide similar criteria for the identification of alcohol use disorders. However, since cultural views of an alcohol use disorder are influenced by prevailing norms in the society, it is unlikely that a given culture will have an identical threshold for the identification of disorders relating to the use of alcohol. Although there have been a number of studies that have shown good cross-system agreement on alcohol dependence but generally only fair to poor agreement between different systems on abuse or harmful use, these findings are limited by the fact that they only used U.S. based samples<sup>37</sup>. In the 1990s, studies were initiated to determine whether instruments developed and tested primarily in English were reliable and comparable in a variety of languages and cultures

Hasin et al.<sup>37</sup> compared the DSM-III-R, DSM-IV and ICD-10 diagnoses of 1811 subjects from 12 sites around the world (Korea was not included). Three diagnostic instruments were used: the CIDI, the SCAN and the AUDADIS. They were made in numerous languages, which involved translation and adjustment for differences in cultural understandings of terminology. The procedures were administered in Western and non-

**TABLE 2.** Cultural Applicability of ICD-10 criteria for Alcohol Dependence (Reprinted from Room et al.: WHO Cross-cultural Applicability Research in Diagnosis and Assessment of Substance Use Disorders: an Overview of Methods and Selected Results. *Addiction* 1996; 91(2): p.212)

ICD-10 criterion	Turkey	Greece	India	Nigeria	Romania	Mexico	Spain	Korea
1) Compulsive use	Overlaps (3)	No term.	No term	Lay meaning differs	Overlaps (2)	No term		
2) Impaired control			Not Diagnostic	Lay meaning differs	Overlaps (1)			Not Diagnostic
3) Withdrawal	Overlaps (1)	No term	No term	No term	No term	No term	No term	No term
4) Tolerance	No term	No term	No term	Lay meaning differs	No term	No term	Not Diagnostic	Not Diagnostic
5) Neglect of alternative pleasures			Not Diagnostic	Lay meaning differs	Lay meaning differs		Not Diagnostic	
6) Persisting despite harm			Not Diagnostic		Lay meaning differs			Not Diagnostic
X) Narrowing of repertoire	Not Diagnostic	Not Diagnostic	Not Diagnostic	Not Diagnostic			Not Diagnostic	

No term: phenomenon recognized but no good term exists;

Lay meaning differs: discrepancy between lay and professional understanding of the phenomenon

Not diagnostic: phenomenon not recognized as meaningfully diagnostic for alcohol dependence

Overlap: overlaps with the numbered criterion

Western settings, which allowed for the effects of culture on cross-system agreement to emerge. Results for dependence diagnoses showed excellent cross-system agreement across sites and instrument but cross-system agreement for abuse/harmful use was much lower and less consistent. Geographic location and culture appeared to have little influence on the results for alcohol dependence and alcohol abuse/harmful use.

Different efforts to assess the cross-cultural applicability have been conducted. Lee et al<sup>38</sup>., as a project of the WHO Cross-Cultural Applicability Research (CAR) study<sup>39</sup>, used the key informant interview survey of the ethnographic research method to establish the Korean concept of the terms related to the use of alcohol and to replace the terminologies, which are inadequate within the Korean culture in diagnosing alcohol use disorders. In Korea, alcohol was generally perceived as a food rather than a substance and so most of the concepts, such as intoxication and tolerance, were not viewed as disease to be treated. Concept of alcohol dependence already existed in the Korean culture but it differed somewhat from the definitions of the DSM and the ICD system. The Korean concept of alcohol dependence tended to lean toward describing drinking patterns and causes and there was especially no mention of withdrawal or tolerance, which were a significant factors in the DSM-III. Fortunately this gap of concept was narrowed as the DSM-III-R and the DSM-IV placed far less emphasis on these physical symptoms. In Korea, tolerance was viewed as a mere increase in drinking capacity or an

indication of health and virility, which did not agree with the pathologic concept of the DSM system. The concept of withdrawal existed but some psychological symptoms were not mentioned. It was also interesting to find that 'loss of control', which is the key feature of 'Alcohol Dependence Syndrome', was viewed as one of the objectives of drinking in Korea (Table 2). Although there were some discrepancies between the DSM-IV/ICD-10 alcohol dependence definitions and the prevailing Korean concept of alcohol dependence, the DSM-IV/ICD-10 made the diagnosis of alcohol dependence more compatible to the Korean concept by broadening the dependence category and not requiring tolerance and withdrawal for diagnosis. Alcohol abuse in the Korean culture was not viewed as a chronic accumulation of effects due to consistent drinking, but as a momentary unpleasant experience, a pattern of drinking, or an acute reaction to an episode of over-drinking. It seemed to be closer to a diagnosis of multiple episodes of alcohol intoxication. Unlike the DSM/ICD definitions, the standard of pathologic drinking was set not according to the consequences of drinking, but according to the purpose in Korea. For example, treating or relieving stress with co-workers or achieving euphoria with alcohol consumption were reasons considered to be normal, while solitary drinking was discouraged. The authors suggested that education of the concepts of alcohol abuse and alcohol dependence was needed to ensure Koreans use these two disease entities appropriately; moreover, the concepts of abuse or harmful use in the DSM and the ICD should be



used after appropriate reversion. However, there have been no further studies about the actual influences of these prevailing norms to the validity of alcohol abuse and dependence in Korea.

## Discussion

### 1. Recent Epidemiological Studies in Korea according to the DSM-IV

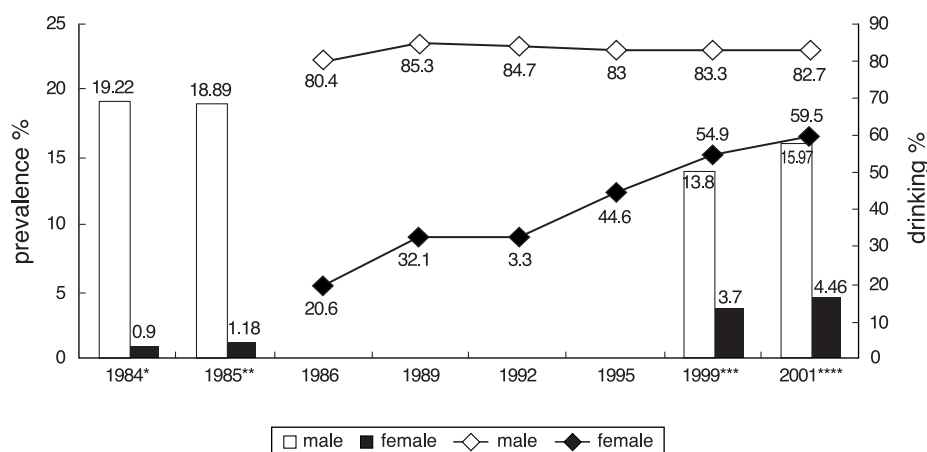
The Korean Epidemiologic Catchment Area Study for Psychiatric Disorders<sup>4</sup> was surveyed in 2001, 17 years after the first epidemiological study in Korea. Subjects were selected by taking multi-stage, cluster samples of 7,867 adult household residents, 18 to 64 years of age, in ten catchment areas. The Korean version of the Composite International Diagnostic Interview was used to estimate the prevalence of mental disorders according to the DSM-IV. Although the lifetime prevalence rate decreased significantly from 21.98% in 1984 to 17.24% in 2001, alcohol use disorder was still the most common lifetime mental disorder (17.24%) in Korea, followed by nicotine use disorder (11.19%), specific phobia (5.16%) and major depressive disorder (4.25%). However, there were noteworthy changes in the figures, some of them related to the distribution of alcohol use disorder. The 'abuse/dependence' ratio that was 1.23 in 1984, reversed to 0.79 in 2001. The lifetime prevalence rate of alcohol dependence overrated alcohol abuse (alcohol abuse=7.11%, alcohol dependence=10.20%) and became the larger portion of alcohol use disorders. There are alternative explanations to these findings, but it reasonable to start with the methodological issues of nosology.

First of all, the reverse of the abuse/dependence ratio reflects that the DSM-IV definition of alcohol abuse, which incorporates social or occupational impairment, is still very vulnerable to swiftly changing social forces. This vulnerability was previously pointed out in the discussions regarding revising the DSM-III. Over the last 20 years, there has been considerable progress in policies and public health programs in order to reduce the enormous alcohol-related cost in Korean society. Although the Korean culture is still tolerant to drinking itself, the efforts to reduce alcohol-related problems, such as traffic accidents under alcohol intoxication or medical problems like alcoholic liver cirrhosis, are setting boundaries for injudicious alcohol use in Korea. These socio-cultural

changes are probably lowering the prevalence rate of alcohol abuse in the Korean society. Meanwhile, alcohol dependence seems less influenced by these social forces.

The dramatic cut in alcohol abuse could have also been affected by fact that the DSM-IV definition of alcohol dependence has been significantly broadened compared to that in the DSM-III, while the alcohol abuse diagnosis has been changed to a residual category. As a result, recently developed alcoholics with combined features are more likely to fall in the category of alcohol dependence. This effect could have been more strengthened in Korea. The traditional concept of alcoholism in Korea did not emphasize physical symptoms, like tolerance and withdrawal<sup>38, 39</sup>. So, the prevalence of these physical symptoms might have been underestimated in the early Korean epidemiological studies base on the DSM-III. As the broaden concept of DSM-IV/ICD-10 alcohol dependence has placed less emphasis on physiological symptoms, the current criteria are now closer to the prevailing Korean concept of alcohol dependence.

Beside the nosological issues, another factor that must be considered is the rapid growth of the female alcoholic population. The male/female ratio has dropped dramatically over the last 17 years. In the 1984 nationwide survey, the lifetime prevalence of alcoholism in men was 20 times greater than that in women (men=45.56%, women=2.23%, male/female ratio=20.43). This feature was shared by Taiwan, another Asian country where the lifetime prevalence in men was 18 times greater than that in women. On the contrary, in Canada, the male lifetime prevalence was only 4 times greater than that in females. However, during the last 17 years, the lifetime prevalence rate of alcohol use disorder in Korea women has increased from 2.23% to 6.42%, and the male/female ratio has dropped from 20.43 to 4.42. The high male/female ratio is currently no longer a characteristic of alcoholism in Korea. It is interesting to note that the distribution of alcohol use disorder in women also shares the distribution in men: alcohol dependence overrates alcohol abuse. The increase of alcohol use disorder among women is more dominant in alcohol dependence, as the lifetime prevalence rate of alcohol dependence has increased from 0.9% to 4.64%, but the lifetime prevalence rate of alcohol abuse in women remained under 2%. The changes in women's roles, in particular receiving increased education and more paid employment outside the



**FIGURE 2.** Lifetime prevalence rate of alcohol dependence and drinking percentage in Korea by sex (\*1984 Nationwide; \*\*1985 Kangwha; \*\*\*1999 Namyangju; \*\*\*\*2001 Nationwide)

home, have probably resulted in increased opportunities for drinking by women. The statistics<sup>40</sup> reported by the Ministry of Health and Welfare support this view (Figure 2). In 1986, only 20.6% of women replied to drink alcohol, but this portion increased rapidly every year and 59.5% of women answered that they drank alcohol in 2001. Meanwhile the percentage of drinking among men had shown similar figures (between 80~85%) during the same time period. It can be assumed that the women subpopulations that had a genetic vulnerability to alcohol dependence, but did not have the opportunity to be exposed to alcohol until the 1980s, are now getting chances to reveal their vulnerabilities as the accessibility of alcohol to female is getting easier in Korea. However, the women subpopulations without a genetic vulnerability are more likely to pursue a mild course with few alcohol related-problems and remit due to the legal and social-cultural forces against alcohol-related problems.

## 2. Current Issues

There are still questions that are under investigation that should be considered in further epidemiological and clinical studies of Korea.

### 2-1. Validity of Alcohol Dependence in Adolescents

Although studies consistently report that the DSM-IV and the ICD-10 alcohol dependence category have good validity, there remain questions to be answered about the validity of alcohol dependence among subpopulations. One of the groups that the validity is being challenged is

adolescents.

The patterns of alcohol use and alcohol-related problems tend to differ in adults and adolescents. Compared with adults, adolescent drinking tends to involve relatively infrequent but high quantity binge drinking<sup>42</sup>, and adolescents who are diagnosed as alcohol dependence according to the DSM-IV drink only every other day on average<sup>43</sup>. These different features affect the application of the DSM-IV dependence criteria and so may differ in adolescents and adults. For example, the onset of tolerance is probably a normal developmental phenomenon for an adolescent who first starts drinking<sup>44</sup> and Chung et al<sup>45</sup> found that change-based definitions of tolerance by the DSM-IV are very poor at distinguishing adolescents with and without alcohol dependence. Another example is related to the criterion "using more or longer than intended." Adolescents often do not have fixed intentions regarding drinking limits, so drinking more than intended in adolescents seems to be due to social reasons rather than a compulsion to drink<sup>46,47</sup>. The prevalence of tolerance shows great variation between studies among adolescents in how the symptoms of tolerance are operationalized. The prevalence of the DSM-IV tolerance across four adolescent clinical samples ranged from 27.0% to 60.8%<sup>48</sup>. More importantly, this variability in the operationalization of symptoms leads to variability in the rates of alcohol abuse and dependence diagnoses. The rate of alcohol abuse ranged from 0.4% to 8.2%, more than a 20-fold difference, while the rate of alcohol dependence ranged from 0.6% to 4.3% about a 7 fold

difference, in these studies<sup>48</sup>.

Although the prevalence of alcohol use disorder in the elderly group has been provided<sup>41</sup>, there have been no published studies about this prevalence of among adolescents in Korea. However, surveys<sup>40</sup> about the drinking percentage in Korea report that more than 70% of Koreans drink and the mean age of the first heavy drinking episode in getting younger. The alcohol use problems among adolescents are already prevalent, even compared with adults, and there should be prompt assessments and interventions with this issue. In addition, as the drinking patterns that are attributed to adolescents are commonly observed in the Korean culture, the validity issues might also be shared. In particular, men commonly use alcohol as a part of business meetings to maintain good relations between supervisors and employees. The custom of passing glasses usually leads to binge drinking and 'loss of control' can be one of the purposes of drinking<sup>38</sup> in these kinds of meetings, which is not compatible to the concept of the DSM-IV. Studies covering the validity of alcohol dependence in adolescents might also reveal some modifications that can be applicable both to Korean adolescents and to Korean adults.

## 2-2. Alcohol Dependence without Abuse

Previous studies have suggested that the reliability and validity problems with alcohol abuse are a result of the hierarchical structure of this category relative to dependence, rather than intrinsically unreliable criteria for abuse. At any rate the hierarchical structure is now under challenge for the source of heterogeneity in the DSM-IV alcohol dependence category. Moreover, questions about the degree to which alcohol dependence co-occurs with alcohol abuse are currently being addressed.

As mentioned above, the DSM-IV distinction between alcohol abuse and dependence was based on the theoretical formulation of the 'Alcohol Dependence Syndrome (ADS)<sup>21, 22</sup>. The two axes in the biaxial ADS distinction were not considered exclusive. Instead, they were defined as different types of alcohol related problems that would occur in some but not all cases. The biaxial distinction provided the basis for separating the dependence and abuse criteria in the DSM-III-R, DSM-IV and ICD-10. However, these classification systems departed from the ADS concept by creating a hierarchical

structure between alcohol dependence and alcohol abuse thus, leaving alcohol abuse undiagnosed in individuals meeting criteria for alcohol dependence. Because of this, little is known about the extent to which alcohol abuse and alcohol dependence co-occur. Hasin et al<sup>49</sup>. reported that among respondents with current alcohol dependence, 33.7% did not additionally meet the criteria for alcohol abuse (29.0% among men and 46.1% among women). Among respondents with lifetime diagnoses of alcohol dependence, 13.9% did not additionally meet the criteria for alcohol abuse (10.1% among men, 22.1% among women). The findings of the early epidemiological studies in Korea, according to the DSM-III, also revealed that there was a considerable subgroup that satisfied alcohol dependence without alcohol abuse. Lee et al.<sup>1</sup> and Namkoong et al<sup>12</sup>. reported that among respondents with lifetime diagnoses alcohol dependence, 10.2% and 9.78% did not additionally meet the criteria for alcohol abuse, respectively. The results of Yanbian<sup>14</sup>, which revealed the alcohol abuse prevalence rate was relatively low (6.95%), also showed that 24.5% with lifetime diagnoses alcohol dependence did not additionally meet the criteria for alcohol abuse (Figure 3). These findings indicate the possibility that the portion of persons with alcohol dependence without alcohol abuse might increase

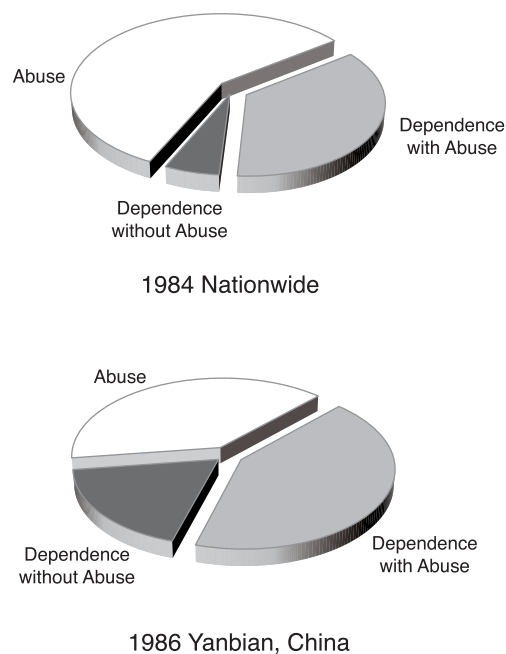


FIGURE 3. Composition of Alcohol Use Disorder

where the overall prevalence rate of alcohol abuse is low.

With the advances in genetic research, the need to improve the level of information offered by phenotypes has become increasingly clear. If there is a meaningful subset of alcohol dependence that does not accompany alcohol abuse, this base of heterogeneity should be explored. The presence or absence of abuse symptoms among individuals with alcohol dependence may be one of the sources of heterogeneity in the clinical phenotype<sup>49</sup>. Reduced heterogeneity in disease indicators should facilitate the search for endotypes of alcohol dependence as well as for the genes underlying the disease.

## CONCLUSION

The concept of alcohol dependence, introduced 20 years ago, appears robust against many potential influences on its category and studies consistently show good validity and good cross-cultural applicability. In contrast, the results for alcohol abuse vary and are more disappointing. Although there have been only a few studies that have assessed this issue in Korea, the nosological issues of alcoholism have been mostly covered as a part with the Korean epidemiological studies of alcoholism and some meaningful findings have been provided. In Korea, alcohol dependence outranks alcohol abuse and is now the main alcohol use disorder. But there are still nosological issues that need to be assessed and considered, such as the validity of alcohol dependence in subpopulations and the heterogeneity of the DSM-IV alcohol dependence category.

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