

Alcohol Use Disorders amongst Inpatients in a General Hospital in Singapore: Estimated Prevalence, Rates of Identification and Intervention

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Abstract

Introduction: Many alcohol-related problems often go undetected and untreated. In Singapore, no epidemiological studies have been done in general hospitals on alcohol use disorders (AUD), i.e. alcohol dependence and abuse (DSM-IV-TR). Such findings are useful in planning AUD liaison services. In this study, we aim to estimate the prevalence of AUD among non-psychiatric inpatients and to determine the rates of identification and intervention rendered by medical staff. **Materials and Methods:** Non-psychiatric medical and surgical wards inpatients aged 21 years and above were recruited over a 3-month period. The Alcohol Use Disorders Identification Test (AUDIT) was used to screen for AUD and the MINI International Neuropsychiatric Interview (MINI English Version 5.0.0) was administered to diagnose AUD if the AUDIT score was 8 or above. Case notes were independently reviewed for AUD identification and if interventions were offered during admissions. **Results:** A total of 5599 inpatients were screened, of which 673 (12%) completed the screening using the AUDIT, and of these, 154 (2.8% of total sample) were positive for AUDIT. In this group, 107 were diagnosed with AUD. The estimated prevalence was 1.9% (approximately 400 cases per year per hospital). The medical staff identified only 25 (23.4%) cases of AUD, out of which, majority of them (76%) were rendered interventions. **Conclusion:** The rate of AUD identification by medical staff was low. Of those identified, majority were given interventions. Thus, the training of health care staff to identify AUD together with the implementation of brief interventions should be considered.

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Introduction

Alcohol consumption is common worldwide. Global prevalence rates of alcohol use disorders (AUD) i.e. alcohol dependence and alcohol abuse according to 'Text Revision' of the Diagnostic and Statistical Manual of Mental Disorders Version 4 (DSM-IV-TR) among adults were estimated to range from 0% to 16% in 2004, with the highest prevalence rates found in Eastern Europe. The point prevalence of AUD for males is estimated to be highest in Eastern European countries, in parts of Southeast Asia and in selected countries in the Americas. For females, the highest estimated prevalence rates of AUD were found in Eastern European countries and in selected countries in the Americas and in the Western Pacific Region.¹ In Singapore,

according to the National Health Surveillance Survey in 2007, 1.2% of local residents aged 18 to 69 years, consumed alcohol regularly (more than 4 days per week).² A population-based survey of mental disorders in Singapore conducted from 2009 to 2010 revealed that the lifetime prevalence of alcohol abuse and alcohol dependence was 3.1% and 0.5%, while the 12-month prevalence of alcohol abuse and alcohol dependence was 0.5% and 0.3%, respectively. The lifetime and 12-month prevalence of AUD was 3.6% and 0.8% respectively.³

AUD poses a major impact on public health.⁴ It was the fourth leading disease accounting for 3.5% of the life loss measured as disability-adjusted life-years in developed countries in 2000⁵ and may cause different physical illnesses

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and mishaps.⁶ Among hospitalised patients, it was found that the prevalence of AUD ranged from 7.4% to 48%, which was greater compared to the general population.⁷⁻¹⁸ This large variation in the prevalence of AUD is largely attributed to the different methodologies used to define alcohol abuse or dependence and population heterogeneity.

Despite the high prevalence and associated morbidity and mortality, diagnosing AUD as part of the medical assessment is often neglected by the medical team and, as a result, is often under-reported in hospital records and hence undertreated. Some studies have shown that identification of AUD by the medical team ranges from 7% to 89%, depending on the department where the patient is hospitalised and the methodology used for diagnosis.¹⁵⁻²⁰ There is evidence to support the use of screening questionnaires to help identify patients with alcohol problems and that brief interventions during hospitalisation would be effective in reducing alcohol consumption.²⁰⁻²³ Hospitalisation is, therefore, an excellent opportunity to identify patients with AUD and initiate brief interventions.

In Singapore, there have been no previous epidemiological studies done on inpatients with AUD or reviews conducted to determine the rates of identification and intervention of this problem by general hospital medical staff. The findings from this study will be useful in planning liaison services for AUD in the general hospital.

The purposes of this study are to estimate the prevalence of AUD among non-psychiatric inpatients in a general hospital, and to determine the rates of identification and intervention rendered by the medical staff.

Materials and Methods

Study Setting

Changi General Hospital (CGH) is a 790-bedded restructured hospital (in 2008) covering the eastern region of Singapore's population in an island of 710.2 km² with a multi-ethnic (Chinese 74.1%, Malays 13.4%, Indians 9.2% and Others 3.3%), multireligious population of 5.18 million.²⁴ The local hospital data shows a slightly higher proportion of Malays (17.1%) admitted compared to the demographics of Singapore (13.4%). The monthly average number of admissions was 3500 in 2008. CGH has both medical and surgical wards with no paediatric, obstetric and gynaecological inpatients.

Study Subjects

The study population consisted of CGH patients who were admitted consecutively and subsequently remained in the hospital for at least 24 hours between 8 September 2008 and 5 December 2008.

The exclusion criteria were: 1) patients below 21 years of age; 2) patients from the psychiatric ward; the forensic and infectious disease wards, and the medical and surgical intensive care units; 3) patients who were recruited during earlier admission within the study period; and 4) patients who lacked physical or cognitive capacity to give consent. Approval was sought from the Institutional Ethics Committee to conduct the study.

Measures

Four research coordinators, who were psychology graduates, carried out the study procedure. They first asked the patient a brief question on whether they had consumed alcohol over the past 1 year. If the answer was yes, they proceeded with the following:

1. Screening phase: the research coordinator administered the Alcohol Use Disorders Identification Test, World Health Organization (AUDIT)²³ to screen for AUD. AUDIT is a 10-item questionnaire, covering quantity, frequency, inability to control drinking, withdrawal relief, loss of memory, injury and concern by others in the last 12 months. The final score of this test ranges from 0 to 40, with scores greater than or equal to 8 (the cutoff point generally used in research) indicating that the patient most likely has an alcohol-related disorder. This test's sensitivity lies between 61% and 96% and its specificity lies between 84% and 96%.²⁵⁻²⁸

AUDIT was administered by the interviewers using the English version and the mean length of the interviews was about 5 minutes. When the inpatients were not conversant in English, the interviewers were trained to ask the questions in Mandarin or Malay in a consistent manner. Neither the English version nor any other translations of the AUDIT have been validated in Singapore although they are commonly used to screen for AUD here.

2. Diagnostic phase: for patients screened positive (i.e. AUDIT = 8 points or more), the diagnostic interview (MINI International Neuropsychiatric Interview MINI English Version 5.0.0 – alcohol abuse and dependence section) was conducted by the same research coordinator. The MINI provided a DSM-IV-TR diagnosis of alcohol abuse or dependence (AUD) in this study.

An additional questionnaire was administered to these patients to obtain basic demographic information such as age, gender, marital status and ethnicity.

The Survey

This is a cross-sectional hospital-based study. Of the 6527 potential patients, 5599 patients consented to the study. Basic demographic data collection and AUDIT were administered to 673 patients who had indicated having consumed alcohol over the past one year.

Patients (n = 154) with AUDIT score ≥8 points, were further subjected to the MINI diagnostic interview. In total, 107 patients were diagnosed with AUD. Case records of these patients were traced after discharge, looking specifically for documentation of AUD identification by the medical staff during the same admission of study and alcohol interventions rendered.

The following were considered to be alcohol interventions: inpatient interventions (e.g. counselling, psychoeducation on AUD, inpatient detoxification, inpatient referral to psychiatrist for detoxification and alcohol treatment); outpatient alcohol-related management plans (e.g. general hospital psychiatric clinic, mental hospital for alcohol treatment, self-help groups like Alcoholics Anonymous, counselling services like Family Service Centre or others); or both.

As part of ethical concerns, all patients who had consumed alcohol in the previous one year were given a brochure ('Alcohol and Your Health') advising on various addiction services available. This was deemed necessary by the study team as the attending physicians and nurses were not alerted to the presence of alcohol consumption or AUD as per study protocol.

Statistical Analysis

Statistical data analyses were performed using SPSS, version 15.0 (SPSS, Chicago, IL). The prevalence of AUD with its corresponding 95% confidence interval (CI) was calculated. We examined the sociodemographic data (age, gender, marital status and ethnicity) for significant association for patients identified to have AUD. The chi square test or Fisher's Exact test was applied for these categorical variables. Statistical significance was set at $P < 0.05$. We postulated that the prevalence of AUD was around 20% and to achieve a precision of ±0.2%, 1500 subjects would have to be screened.

Results

Clinical Characteristics

In total, there were 10,818 patients admitted during the 3-month study period. Although we had data on the number of readmissions (2104) to the hospital, we omitted keeping track of the number of cases that were excluded because they were studied in earlier admissions during that period.

Following exclusion, we had 6527 potential participants; 908 of them who could not be recruited for reasons of discharge or transfer before the research coordinator could reach them, and 20 refused to participate in the study. The rest (5599 or 85.8% of potential participants) were asked if they had consumed alcohol over the past one year, of which 673 (12%) of them said they did. There were 154 participants who were screened positive for AUD using AUDIT, of which 107 of them were diagnosed to have AUD after undergoing the MINI diagnostic interview (Fig. 1).

The sociodemographic characteristics of the 107 patients diagnosed to have AUD using MINI (i.e. MINI positive) are shown in Table 1.

Age

The mean age was 38.5 years old (standard deviation (SD) 14.0) and the median was 34 years old. Majority of them (57%) were in the age group between 21 to 39 years

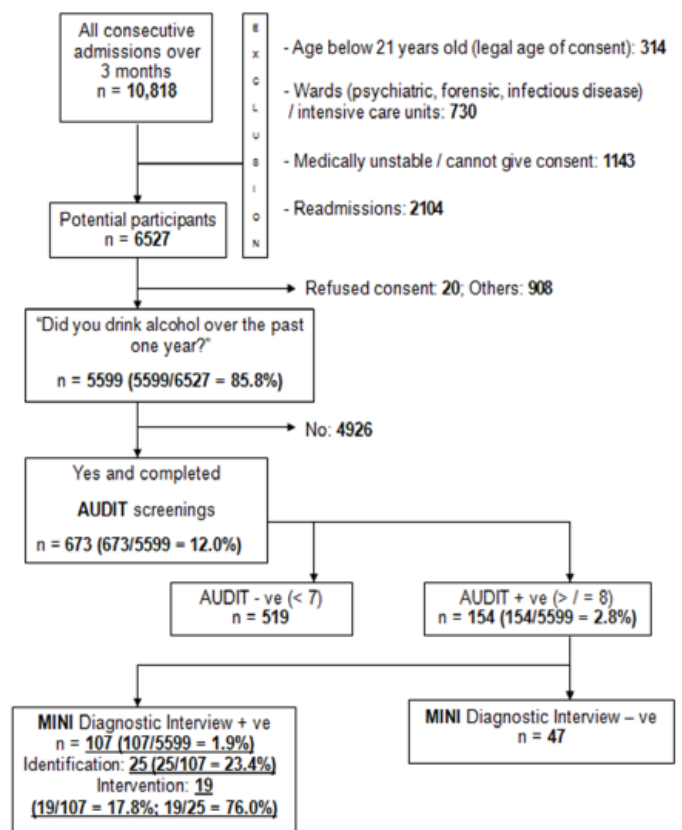


Fig. 1. Procedural flow diagram. AUDIT: Alcohol Use Disorders Identification Test; MINI: Alcohol abuse and dependence section of MINI International Neuropsychiatric Interview (MINI English Version 5.0.0).

Table 1. Basic Sociodemographic Features of Patients Diagnosed with AUD Using MINI Positive

	MINI Positive (n = 107)
Age (years)	
Mean (SD)	38.5 (14.0)
Median	34
Minimum, maximum	21, 77
Age (years), n (%)	
21 – 29	38 (35.5) Abuse/dependence: 9/29
30 – 39	23 (21.5) Abuse/dependence: 3/20
40 – 49	17 (15.9) Abuse/dependence: 5/12
50 – 59	20 (18.7) Abuse / Dependence: 2/18
60 – 69	7 (6.5) Abuse/dependence: 2/5
70 & over	2 (1.9) Abuse/dependence: 1/1
Gender, n (%)	
Male	96 (89.7) Abuse/dependence: 21/75
Female	11 (10.3) Abuse/dependence: 1/10
Marital status, n (%)	
Married	39 (36.5) Abuse/dependence: 10/29
Others (single, divorced, widowed)	68 (63.6) Abuse/dependence: 12/56
Ethnicity, n (%)	
Chinese	61 (57.0) Abuse/dependence: 17/44
Malay	13 (12.2) Abuse/dependence: 3/10
Indian	25 (23.4) Abuse/dependence: 2/23
Others	8 (7.5) Abuse/dependence: 0/8

AUD: Alcohol use disorders; MINI: MINI International Neuropsychiatric Interview; SD: Standard deviation

old. Within the same age group, although there were more patients with alcohol dependence compared to those with abuse, this was not statistically significant ($P = 0.37$).

Gender

There were 96 (89.7%) male and 11 (10.3%) female patients. Within the same gender, although there were more patients with alcohol dependence compared to abuse, this was not statistically significant ($P = 0.29$).

Marital Status

There were 39 (36.5%) participants who were married and the majority (68, 63.6%) were single, divorced or widowed. Within the same marital status, although there were more patients with alcohol dependence compared to abuse, this was not statistically significant ($P = 0.33$).

Ethnicity

There were 61 (57%) Chinese, 13 (12.2%) Malays, 25 (23.4%) Indians and 8 (7.5%) of Other ethnic group. Within the same ethnic group, although there were more patients with alcohol dependence compared to abuse, this was not statistically significant ($P = 0.09$).

For the 107 AUD (MINI positive) patients, 62 (57.9%) had AUDIT score of 8-12, and 45 (42.1%) had AUDIT score of 13 or more. However, following MINI diagnostic interview, 22 (20.6%) were diagnosed to have alcohol abuse and 85 (79.4%) were diagnosed to have alcohol dependence. Of those with AUDIT score of 8-12, only 21% were diagnosed to have alcohol abuse using MINI while the rest were diagnosed to have alcohol dependence. For the 47 patients who were screened positive using AUDIT but not diagnosed to have AUD (MINI negative), 36 had AUDIT scores of 8-12 and 11 had AUDIT scores of 13 or more.

These reflect the variation in sensitivity and specificity of AUDIT screening in our local population. As there may be possible under-reporting of alcohol usage from patients when screened using AUDIT, a lower AUDIT score may have to be used as a cutoff point for our local population to increase the specificity of AUDIT.

Estimated Prevalence of AUD

The estimated prevalence of AUD over the 3-month period was 1.9% (107/5599), 95% confidence interval (CI) (1.6% to 2.3%; EB Wilson 1927).

Physician's Identification of AUD

The medical records of the 107 patients diagnosed to have AUD (MINI positive) were reviewed. The medical staff correctly identified 23.4% (25/107) of the AUD (MINI positive) cases.

Comparison of the sociodemographic characteristics of the 25 patients who were correctly identified to have AUD by the medical staff versus the 82 patients who were not identified to have AUD is shown in Table 2.

Age

For the 25 patients, their mean age was 46.6 years old (standard deviation 9.8) and the median was 49 years old.

Majority of them (18, 72%) were in the age group between 40 to 59 years old. For the other 82 patients, their mean age was younger at 36.1 years old (SD 14.2) and the median was 31 years old. Majority of them (56, 68.3%) were in the younger age group between 21 to 39 years old. The rate of identification of AUD was lower in patients who were younger and this was statistically significant ($P < 0.05$).

Gender

For the 25 patients, majority (24, 96%) were males. For the other 82 patients, 72 (87.8%) were males and 10 (12.2%) were females. There were more males than females in both the AUD identified and AUD non-identified groups, with no significant difference in the two groups ($P = 0.22$).

Marital Status

For the 25 patients, majority (20, 80%) were single, divorced or widowed. For the other 82 patients, 34 (41.5%)

were married and 48 (58.5%) were single, divorced or widowed. There were more patients who were single, divorced or widowed than those married in both the AUD identified and AUD non-identified groups, with no significant difference in the two groups ($P = 0.06$).

Ethnicity

For the 25 patients, majority (15, 60%) were Indians, followed by Chinese (6, 24%), Malay (2, 8%) and Others (2, 8%). For the other 82 patients, majority (55, 67.1%) were Chinese, followed by Malay (11, 13.4%), Indian (10, 12.2%) and Others (6, 7.3%). It is noted that the percentage of Malays served in this sector is slightly higher at 17.1% as compared to 13.4% in the general population. The rate of identification of AUD was higher in patients who were Indians as compared to those who were non-Indians, specifically the Chinese, and this was statistically significant ($P < 0.05$).

Physician's Interventions for AUD

Of the 25 patients diagnosed to have AUD, 19 of them (76%) were rendered interventions. Comparison of the sociodemographic characteristics of the 19 patients who were rendered interventions by the medical staff versus the 88 patients who were not rendered interventions is shown in Table 3.

Age

For the 19 patients, their mean age was 47.5 years old (SD 9.4) and the median was 50 years old. Majority of them (14, 73.7%) were in the age group between 40 to 59 years old. For the 88 patients, their mean age was younger at 36.6 years old (standard deviation of 14.1) and the median was 31 years old. Majority of them (58, 65.9%) were in the age group between 21 to 39 years old. The rate of intervention of AUD was lower in patients who were younger and this was statistically significant ($P < 0.05$).

Gender

For the 19 patients, majority (18, 94.7%) were males. For the other 88 patients, 78 (88.6%) were males and 10 (11.4%) were females. There were more males than females in both groups, with no significant difference between the two groups ($P = 0.38$).

Marital Status

For the 19 patients, majority (16, 84.2%) were single, divorced or widowed. For the other 88 patients, 36 (40.9%) were married and 52 (59.1%) were single, divorced or

Table 2. Basic Sociodemographic Features of Patients Identified/Not Identified to Have AUD by Medical Staff

	AUD Identified by Medical Staff (n = 25)	AUD Not Identified by Medical Staff (n = 82)	P Value
Age (years)			
Mean (SD)	46.6 (9.8)	36.1 (14.2)	
Median	49	31	-
Minimum, maximum	25, 62	21, 77	
Age (years), n (%)			
21 – 29	1 (4.0)	37 (45.1)	
30 – 39	4 (16.0)	19 (23.2)	
40 – 49	8 (32.0)	9 (11.0)	<0.05
50 – 59	10 (40.0)	10 (12.2)	
60 – 69	2 (8.0)	5 (6.1)	
70 & over	0 (0.0)	2 (2.4)	
Gender, n (%)			
Male	24 (96.0)	72 (87.8)	0.22
Female	1 (4.0)	10 (12.2)	
Marital status, n (%)			
Married	5 (20.0)	34 (41.5)	0.06
Others	20 (80.0)	48 (58.5)	
Ethnicity, n (%)			
Chinese	6 (24.0)	55 (67.1)	
Malay	2 (8.0)	11 (13.4)	<0.05
Indian	15 (60.0)	10 (12.2)	
Others	2 (8.0)	6 (7.3)	

AUD: Alcohol use disorders; SD: Standard deviation

Table 3. Basic Sociodemographic Features of Patients Rendered/Not Rendered Interventions by Medical Staff

	Interventions Rendered by Medical Staff (n = 19)	Not Rendered Interventions by Medical Staff (n = 88)	P Value
Age (years)			
Mean (SD)	47.5 (9.4)	36.6 (14.1)	
Median	50	31	
Minimum, maximum	25, 62	21, 77	
Age (years), n (%)			
21 – 29	1 (5.3)	37 (42.1)	
30 – 39	2 (10.5)	21 (23.9)	
40 – 49	6 (31.6)	11 (12.5)	<0.05
50 – 59	8 (42.1)	12 (13.6)	
60 – 69	2 (10.5)	5 (5.7)	
70 & over	0 (0.0)	2 (2.3)	
Gender, n (%)			
Male	18 (94.7)	78 (88.6)	0.38
Female	1 (5.3)	10 (11.4)	
Marital status, n (%)			
Married	3 (15.8)	36 (40.9)	0.06
Others	16 (84.2)	52 (59.1)	
Ethnicity, n (%)			
Chinese	2 (10.5)	59 (67.1)	
Malay	2 (10.5)	11 (12.5)	<0.05
Indian	14 (73.7)	11 (12.5)	
Others	1 (5.3)	7 (8.0)	

SD: Standard deviation

widowed. There were more patients who were single, divorced or widowed than those married in both groups, with no significant difference between the two groups ($P = 0.06$).

Ethnicity

For the 19 patients, majority (14, 73.7%) were Indians, followed by Chinese (2, 10.5%) and Malay (2, 10.5%), and Others (1, 5.3%). For the other 88 patients, majority (59, 67.1%) were Chinese, followed by Malay (11, 12.5%) and Indian (11, 12.5%), and Others (7, 8%). The rate of intervention of AUD was higher in Indian patients as compared to the non-Indians, specifically the Chinese, and this was statistically significant ($P < 0.05$).

Discussion

Estimated Prevalence of AUD and its Associated Factors

The estimated prevalence of AUD amongst the non-psychiatric inpatients over a 3-month period in this study

was 1.9%. This equates to approximately 400 cases of AUD being presented to CGH every year. The prevalence in this study is higher than the 12-month prevalence of AUD in the general population of Singapore (0.8%),³ which is similar to other international reports where the prevalence of AUD is higher in general hospitals compared to the general population.

The prevalence of AUD in this study is lower than the variation of prevalence described in the international literature (7.4% to 48.0%).⁷⁻¹⁸ The prevalence in this study may have been underestimated for various reasons.

Firstly, the exclusion criteria may have an impact on the study results. Patients below 21 years old who may have alcohol consumption have been excluded from the study due to the legal age of obtaining informed consent for participation in the study. There is the possibility of missing out a number of patients with alcohol problems in the psychiatric, forensic, infectious disease wards, as well as the medical and surgical intensive care units. Those who were cognitively or physically incapable of participating in this study may have alcohol-related conditions (e.g. alcohol intoxication, withdrawal delirium etc.).

Secondly, 14.2% (928/6527) of potential participants did not take part in the study due to refusal of consent or could not be recruited before the research coordinator could reach them. This group of patients, especially the 908 potential participants who could not be recruited in time, could have potentially affected the outcome of the study.

Thirdly, the AUDIT cutoff point used in this study was 8, which is higher compared to a lower cutoff point of 6 in another Asian study with a more homogenous population,¹⁷ in which the AUDIT was validated with 2-phase identification strategy. As discussed, the variation in sensitivity and specificity of AUDIT screening in our local population together with the possibility of under-reporting of AUD from them may have led to a misclassification during the screening phase, leading to false negatives.

Last but not least, as there is a higher proportion of Malay ethnic group in our catchment area (17.1%) as compared to the general population in Singapore (13.4%), there may be lesser consumption of alcohol due to religious practices amongst the population surveyed. This may not be representative of the general population in Singapore.

Cases of AUD could possibly have been studied in the busy emergency department and short-stay unit (less than 24 hours admissions) of the hospital, which may have led to a higher estimated prevalence rate. However for the sake of comparison, most other studies studied inpatients and emergency department patients separately.^{10,14,16,18,29} The geriatric services available in the hospital could however have led to a lowered rate, as frail or cognitively impaired patients were excluded.

With regards to the sociodemographic characteristics of patients diagnosed with AUD (MINI positive), majority were young adults (57%, in the age group between 21 to 39 years old), Chinese (57.0%), males (89.7%) who were single, divorced or widowed (63.6%). Although females represent a lower proportion of those diagnosed with AUD at 10.3% in this study, there is a trend showing an increase in alcohol consumption amongst women over the years. Alcohol consumption, in particular binge drinking, had increased among Singaporean drinkers between 1992 and 2004, from 5.1% to 10%, in both genders. It is most evident among adults aged between 18 to 29 years old, and frequent drinking increase was most pronounced among women aged between 18 to 29 years old.³⁰

Rate of Identification of AUD by Medical Staff

There was a low rate of identification of AUD by the medical staff. Only 23.4% (25/107) of the AUD (MINI positive) cases were correctly identified by them after reviewing the case records.

The under-identification of cases with AUD at hospital admission is a problem that has been described previously.^{15-17,19,31} Several explanations have been advanced for the low rate of identification of AUD by physicians in general. Firstly, physicians may be reluctant to diagnose AUD because they view it as a moral rather than a medical problem, or judge the patient to be self-destructive. Secondly, they may lack the knowledge to diagnose or differentiate various symptoms or signs caused by AUD.²⁹ Thirdly, physicians other than psychiatrists believe they have been trained to treat physical problems. If they regard alcohol abuse as a psychological disorder, they may feel ill-equipped to deal with it. Lastly, patients with AUD often express anger, hostility, denial, delusions or are uncooperative. Medical professionals who react to such attitudes with frustration may feel discouraged and unable to provide further help.¹⁹

The low rate of identification of AUD by the medical staff in this study indicates that more effort can be focused on training health care staff to identify AUD (e.g. giving educational talks on AUD or using alcohol screening tools etc.) to improve the rate of identification of AUD.

Rate of Intervention for Patients with AUD Rendered by Medical Staff

Even though the overall rate of intervention was low among the AUD (MINI positive) patients at 17.8% (19/107), most of the cases (76%, 19/25) identified by the medical staff were rendered interventions. Thus, the low overall rate of intervention was mainly due to low identification rate since most of the identified patients received interventions. Having said that, this rate of intervention post-identification

can be further enhanced through training of health care staff so as to raise awareness of the existing inpatient and outpatient resources available to manage patients with AUD.

Sociodemographic Features of AUD Patients Identified/Rendered Intervention by Medical Staff

The sociodemographic features of patients identified to have AUD by medical staff and of those rendered intervention by them were striking in that the rates were significantly lower in patients who were younger or were Chinese compared to those who were older or were Indians (Figs. 2 and 3).

We did not capture the clinical profile of those who were identified to have AUD by the medical staff. However it is reasonable to believe that the physicians would more readily identify those who had more severe alcohol-related disease such as hepatic cirrhosis. The so-called “silent” AUD, especially in the younger patients, would be those without such clinical clues due to less severe medical complications. They would probably be identified only by taking a proper alcohol history or AUD screening. There may also be possible ethnic bias in the identification as well as interventions rendered for patients with AUD.

Strengths, Limitations and Improvements

There are several strengths in this study. Firstly, case finding was based on a semi-structured, standardised clinical interview which provided diagnostic criteria for AUD. Secondly, the interviews were conducted by trained psychology graduates. This minimises any potential bias derived from either the unsatisfactory validity of lay interview for AUD or the screening instruments. Thirdly, the data was collected over a 3-month period to reduce intermonth variation as much as possible.

Some of the limitations of this study are that the study subjects were not representative of all non-psychiatric inpatients in a general hospital during the study period or to the population of Singapore in general. Also, there was neither validation of AUDIT done in Singapore nor any validated translations used in the study.

With regards to improving future related studies, we can consider using a lower cutoff score for AUDIT screening (e.g. 6) so as to reduce possible false negatives. In addition, we can collect more clinical data to allow us to have a better picture of the clinical profile of those identified to have AUD by the medical staff.

Implications

Our study demonstrates that hospitalisation provides an opportunity to identify and provide interventions for AUD.

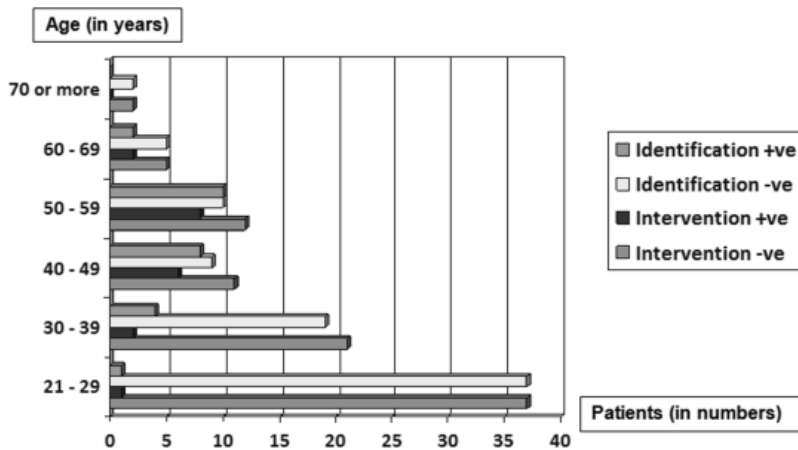


Fig. 2. Chart showing comparison of AUD (MINI positive). Patients identified or not identified to have AUD/intervention given or not given by medical staff versus age group. AUDIT: Alcohol use disorders identification test; MINI: Alcohol abuse and dependence section of MINI International Neuropsychiatric Interview (MINI English Version 5.0.0).

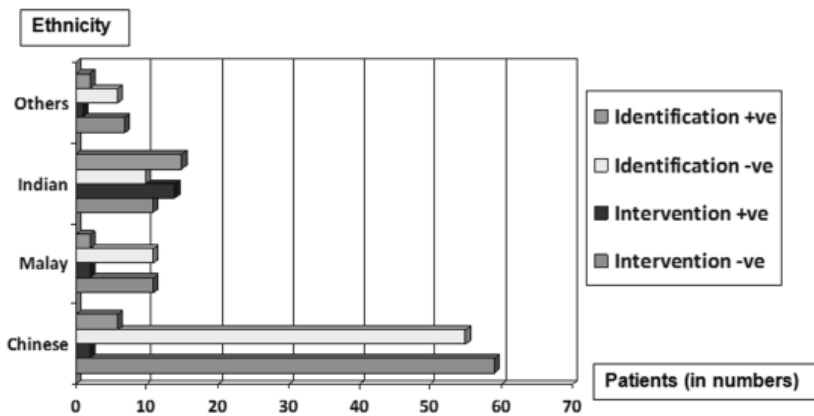


Fig. 3. Chart showing comparison of AUD (MINI positive). Patients identified or not identified to have AUD/intervention given or not given by medical staff versus ethnicity. AUDIT: Alcohol use disorders identification test; MINI: Alcohol abuse and dependence section of MINI International Neuropsychiatric Interview (MINI English Version 5.0.0).

Successful achievement of abstinence or harm reduction may require early involvement by physicians who are treating the patients for other medical conditions. In the busy setting of a general hospital, we recommend some approaches to diagnosis and treatment of AUD.

Firstly, incorporating short questionnaires or instruments to screen possible misuse of alcohol into routine history taking is suggested. The main purpose of routine screening does not only help to enhance physicians’ detection of AUD, but also to remind the physicians to initiate interventions.¹⁹ Indeed, even the use of a single screening question, ‘Did you drink alcohol in the past one year?’ could lead to the identification of a large number of patients with AUD in the general hospital (107/673, i.e. 15.8% of those who responded ‘yes’ to this question were found to have AUD in this study).

Secondly, acknowledging the sociodemographic variables associated with AUD unique to our local population may allow us to establish a risk profile for AUD patients in future.

Certainly, these variables must not lead to stereotyping of patients with AUD. Recognising this risk profile may alert the medical staff to patients at high risk for AUD, making the use of the diagnostic instrument more effective, and consequently, increase the predictive value of the applied test, although this risk factor-based approach would have to be tested and validated in future studies. This study also highlighted the fact that AUD patients with certain characteristics i.e. those who were younger or were Chinese, had poorer identification and intervention rates. This implies that further psychoeducation may be needed among the medical staff so that we can address not only the rate of identification or intervention, but also deal with the neglected qualitative aspects of patients with AUD in our local setting.

Last but not least, health administrators planning for postgraduate continuous educational programmes for medical professionals regarding AUD should focus on encouraging staff to enhance patients’ motivations of

abstinence and to give health advice regarding alcohol use, as well as to set up appropriate addiction consultation-liaison services. The hospital, since 2008, has since grown in number of patients, beds, staff and services (inpatient, outpatient and community). Training of all health care professionals is more feasible than just focusing on addiction specialists or allied health so that more patients with AUD can be identified and treated.

Conclusion

Although the prevalence of AUDs among the non-psychiatric general hospital inpatients in this study was 1.9%, it is likely to be only the tip of the iceberg and an underestimate of the extent of alcohol problem drinking among general hospital inpatients in Singapore. The rate of recognition of this problem was low. However, once a patient with AUD is identified by medical staff, the delivery of interventions is relatively good.

Thus, the implementation of systematic alcohol screening with brief interventions should be considered. These would lead to higher detection rates of problem drinking. In addition, it would remind physicians to initiate subsequent counselling or brief interventions for these patients tailored to the type of problem drinking such as referral to alcohol treatment programmes.

More effort should be put into training and increasing the awareness of medical, nursing and allied health care professionals about AUD. Health policy and educational programmes should focus on training health care professionals to recognise AUDs, carry out brief interventions and direct patients toward appropriate interventions.

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