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# Women and People From Deprived Areas Are Less Likely to be Assessed for Liver Transplantation for Alcohol-related Liver Disease: Results From a National Study of Transplant Assessments

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**Background.** Alcohol-related liver disease (ArLD) is the most common indication for liver transplantation in Europe and the United States. Few studies have examined the characteristics of patients with ArLD formally assessed for liver transplants. **Methods.** We collected prospective data on every patient with ArLD formally assessed for liver transplantation in the United Kingdom during a 12-mo period. **Results.** Five hundred forty-nine patients with ArLD were assessed for liver transplantation. The median Model for End-Stage Liver Disease (MELD) score was 15 and the UK MELD score was 54. 24% were women. The median duration of abstinence was 12 mo. Listing outcomes were 59% listed, 4% deferred, and 37% not listed. The reasons for not listing were medical comorbidities (29%), too early for transplantation (20%), potential recoverability (18%), recent alcohol use (12%), and other (21%). Patients listed for transplant had a higher median MELD (16 versus 13; $P < 0.001$) and UK MELD scores (55 versus 53; $P < 0.001$), longer duration of abstinence (median 12 versus 10 mo; $P = 0.026$), and no differences in sex ($P = 0.258$), age distribution ($P = 0.53$), or deprivation deciles compared with those not listed. Comparing patients assessed for transplantation to national data on deaths from ArLD revealed a lower proportion of female patients (24% assessed versus 36% deaths; $P < 0.001$) and patients from areas of high deprivation (assessments: deaths, most deprived decile 1:20 versus least deprived decile 1:9). **Conclusions.** This study provides the first complete national profile of evaluations for liver transplantation for patients with ArLD. Women and patients from the most deprived deciles of the population may be relatively underrepresented.

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Alcohol is the leading cause of cirrhosis globally.[1] In England, premature deaths from alcohol-related liver disease (ArLD) have risen by 74% over the past 20 y,[2] a pattern which is reflected in the United States[3] and the rest of the world.[1,4] The problem has been exacerbated by the COVID-19 pandemic, which brought major increases in alcohol-related hospitalizations and mortality.[5] Liver transplantation is a life-saving treatment for carefully selected patients with advanced ArLD with survival rates comparable with transplantation for other indications. ArLD continues to be the most common indication for liver transplants in the United States[6] and Europe.[7]

In assessing a patient's suitability to go on the waiting list for liver transplantation, 2 major factors are considered. First, whether the patient needs a transplant, based on predicted prognosis from the stage of liver disease and associated complications, and, second, the anticipated survival post–liver transplant. For patients with ArLD, specific considerations include the marked reversibility, even of advanced decompensated ArLD, with abstinence from alcohol.[8-10] Timing is crucial, as a longer period of abstinence may allow patients to improve sufficiently such that a transplant is no longer required, but delayed referral may mean that patients miss a potential window for transplantation. Furthermore, patients require careful assessment to evaluate their potential risk of relapse to alcohol after liver transplantation[11,12] as it is known that return to harmful alcohol consumption negatively affects long-term posttransplant survival.[13,14] The often-quoted "6-mo rule" for alcohol abstinence is not a criterion for acceptance onto the transplant waiting list in the United Kingdom and has not been formally adopted by United Network for Organ Sharing.[15,16] Finally, patients with alcohol use disorder may also have other substance misuse and/or psychiatric or social factors, which may make compliance with medications, abstinence, and community support in the postoperative period more challenging and may mitigate against referral for assessment or transplant listing.[17-19]

In the context of these challenges, it is important to know which patients are being formally assessed for transplantation and what factors are influencing listing decisions.

In the United Kingdom, liver transplantation is overseen through the National Health Service Blood and Transplant (NHSBT), and across all causes of liver disease, there are nationally agreed criteria for patients to be offered a place on the liver transplant waiting list.[20] Under the auspices of NHSBT, the Liver Advisory Group has released updated guidelines for clinicians about referrals for transplantation in patients with ArLD.[21] A stated goal of these guidelines was "improving inter- and intraunit consistency with regard to applying robust listing criteria." The guidelines emphasize early referral to a liver transplant center for multidisciplinary assessment. To understand how clinicians and transplant centers are implementing these guidelines, it will be critical to monitor the characteristics and outcomes of patients undergoing a formal liver transplant assessment.

There is a systematic process for the collection and analysis of outcome data for those patients listed for liver transplantation in the United Kingdom, both pre- and posttransplantation through NHSBT.[22] However, little is known about patients who are referred for consideration of liver transplantation and formally assessed but ultimately not offered a place on the transplant waiting list.[23] We wished to gain a greater understanding of the characteristics of patients with ArLD being considered for liver transplantation and whether there were any inequalities in this process. This information could help give greater clarity about which patients are being referred to transplant units and the issues that affect perceived suitability for transplant in this patient group. Furthermore, the findings might help guide future referrals and encourage fairness, consistency, and transparency in the pathway from the diagnosis of advanced ArLD to access to liver transplantation based on consistent principles.

## MATERIALS AND METHODS

Prospective data were collected for patients with alcohol-related cirrhosis assessed for liver transplantation from all 7 UK adult liver transplant centers. Data were collected between August 1, 2020, and July 31, 2021. Representatives from each center collected anonymized data using an agreed proforma. The information collected was sex, age category, indication for transplant, Model for End-Stage Liver Disease (MELD) score, United Kingdom MELD (UKELD) score,[24] whether hepatocellular carcinoma (HCC) was present, 3 digits of UK postcode, cofactors for liver disease, duration of abstinence from alcohol at time of assessment (in months), listing decision, and, if not listed for transplantation, reasons for decline or deferral.

Every patient with alcohol as a contributing factor to their liver disease, who was formally discussed at a transplant multidisciplinary team meeting, was included in the analysis. Early liver transplantation for acute alcohol-associated hepatitis is not currently an indication for liver transplantation in the United Kingdom, so no patients with this condition were included in this analysis. Where a patient was assessed on multiple occasions the most recent assessment was used. One patient was assessed for a multivisceral transplant and was excluded from the analysis.

This information was collected as part of a national service evaluation, which received Information Governance approval from the sponsor (Cambridge University Hospitals NHS Foundation Trust) as well as approval from all other Trusts involved.

Data were collected on spreadsheets using Microsoft Excel and was coded and analyzed on IBM SPSS version 25. We compared the characteristics of patients who were listed for transplant with those not listed. Deferred patients were excluded from the comparisons. Normally distributed data were compared using the independent *T* test and nonnormally distributed data were compared using the Mann-Whitney *U* Test. Categorical variables were compared using the chi-square test.

As a measure of socioeconomic status, we collected data on the index of multiple deprivation (IMD)[25] score for each patient. IMD is used to classify the relative deprivation of small areas, which can be identified through postcodes. Multiple components of deprivation are weighted and compiled into a decile score of deprivation (1 = most deprived, 10 = least deprived). This process is devolved to the 4 nations that compose the United Kingdom and each nation uses different weightings and different geographical sizes to calculate the score. Thus, scores cannot be accurately compared across nations. We therefore focused this analysis on patients with

postcodes in England. In 19 of 462 cases in England, it was not possible to calculate the IMD score from a patient postcode using the online tool.[25]

Office for National Statistics mortality data for ArLD deaths in England were analyzed for the same time period as the study (August 1, 2020–July 31, 2021) to provide comparative analyses for distributions of those referred for assessment by sex, age, and decile of deprivation. Deaths with an underlying cause of ArLD (International Classification of Disease Code 10 Code K70) were identified. The analysis was performed using Microsoft SQL Server Management Studio 18 and Microsoft Excel.

## RESULTS

### Demographics and Comparison of Transplant Assessments to National Data on ArLD

There were 549 patients with alcohol-related cirrhosis formally assessed for liver transplantation during the study period (Table 1). The contributions from the 4 nations of the United Kingdom were as follow: England 462 (84%), Scotland 57 (10%), Wales 19 (3%), Northern Ireland 9 (2%), whereas from other was 2 (1%). One hundred thirty-four patients (24%) were women. This compares with women accounting for 36% of deaths from ArLD. Age was collected as a categorical variable, and distribution by sex is shown compared with national data for deaths from ArLD in England over the same period (Figure 1).

It was possible to calculate the deprivation decile for 443 of a possible 462 patients with postcodes in England (96%). We compared the distribution of the numbers of deaths from ArLD in England by deprivation decile with the distribution of patients with ArLD assessed for transplantation (Table 2). This analysis revealed that patients in decile 1 (the most deprived) had the worst ratio of assessments: deaths (1:20), compared with 1:8 and 1:9 for deciles 9 and 10 (the most affluent).

### Liver Disease Severity

The median MELD score of patients was 15 (interquartile range [IQR], 11–20) and the median UKELD score was 54 (IQR, 51–58). Twenty-one patients (4%) had a transjugular intrahepatic portosystemic stent shunt in place before transplant assessment.

Many patients had multiple indications for liver transplantation based on current UK listing criteria.[20] The pooled indications for liver transplant were as follow: UKELD score ≥49 (90%), ascites (31%), hepatic encephalopathy (18%), hepatocellular carcinoma (16%), and other (11%). Other indications included hepatopulmonary syndrome, chronic gastrointestinal blood loss, and hepatic hydrothorax. Two hundred forty-seven patients (45%) were assessed, with the sole reported indication being their degree of liver dysfunction as assessed by the UKELD score.

There were 57 patients with metabolic dysfunction–associated steatotic liver disease and increased alcohol intake (MetArLD) (10%). Additional cofactors included hepatitis C virus (n = 23), hepatitis B virus (n = 3), alpha-1 antitrypsin deficiency (n = 9), hemochromatosis (n = 6), autoimmune hepatitis (n = 5), primary sclerosing cholangitis (n = 3), primary biliary cholangitis (n = 2), familial intrahepatic cholestasis (n = 1), polycystic liver disease (n = 1), and telomerase RNA component mutation (n = 1).

### Abstinence From Alcohol

There was a bimodal distribution in abstinence duration at the time of assessment, with peaks in both short-term and very long-term abstinence, and there were visually no clear differences between men and women (Figure 2). The median duration of abstinence at the time of assessment was 12 mo (IQR, 8–24 mo). The difference in abstinence distribution between men and women did not reach statistical significance (medians: men 12.5 mo versus women 11 mo; $P$ = 0.051). Those patients found to be actively drinking during the assessment process were recorded as having an abstinence period of 0 mo. There were 20 patients (4%) ineligible for a liver transplant due to a documented abstinence period of <3 mo or because they tested positive for alcohol during the assessment.

### Listing Outcomes

Of the total cohort of 549 patients, 326 (59%) were listed for liver transplantation, 21 (4%) were deferred, and 202 (37%) were not listed.

Many patients had multiple reasons provided for not being listed. The reasons given for not listing were as follows (Figure 3): medical comorbidities (29%), too early to need transplant (20%), potential recoverability (18%), active or recent alcohol use (12%), concern about risk of return to harmful drinking (8%), surgical risk (5%), HCC outside criteria (3%), compliance (2%), additional drug misuse (2%), and psychiatric comorbidities (1%). Five patients died between the initial assessment and the final listing decision being reached.

### Comparison of Patients by Listing Outcome

The proportion of patients listed was not significantly different by sex (women 57% [76/134] versus men 60% [250/415]; $P$ = 0.45). There was also little variation in listing decisions by age group (Table 1). Furthermore, there was no evidence of listing differences across deprivation deciles (Figure 4).

Listed patients had a higher MELD score (listed median 16 [IQR, 11–21] versus not listed median 13 [IQR, 10–17]; $P$ < 0.001) and UKELD score (listed median 55 [IQR, 52–59] versus not listed median 53 [IQR, 50–56]; $P$ < 0.001). A significantly lower proportion of patients who were listed had ascites as an indication compared with the group who were not listed (24.2% versus 39.6%; $P$ < 0·001). This was the only transplant indication for which there was a significant difference between the groups. There were no significant differences between listed patients and not listed patients based on age, sex, or any other parameters (Table 1). There was no difference in listing rate between patients with short periods of abstinence (3–6 mo) and those with longer periods of abstinence (>6 mo; 58.7% versus 62.7%, $P$ = 0.89).

## DISCUSSION

This study provides the first complete national profile of all patients with ArLD being assessed for liver transplantation.

**TABLE 1.**

**Demographics and comparison of listed vs not listed patients**

| | Total (N = 549) | Listed (n = 326) | Not listed (n = 202) | Deferred (n = 21) | *P* values of listed vs non listed |
|---|---|---|---|---|---|
| Sex, n (%) | | | | | |
| Female | 134 (24.4) | 76 (23.3) | 53 (26.2) | 5 (23.8) | 0.45 |
| Male | 415 (75.6) | 250 (76.7) | 149 (73.8) | 16 (76.2) | |
| Age, y, n (%) | | | | | |
| 30–34 | 2 (0.4) | 1 (0.3) | 1 (0.5) | 0 (0.0) | 0.62 |
| 35–39 | 16 (2.9) | 9 (2.8) | 6 (3.0) | 1 (4.8) | |
| 40–44 | 34 (6.2) | 21 (6.4) | 13 (6.4) | 0 (0.0) | |
| 45–49 | 73 (13.3) | 44 (13.5) | 27 (13.4) | 2 (9.5) | |
| 50–54 | 103 (18.8) | 69 (21.2) | 27 (13.4) | 7 (33.3) | |
| 55–59 | 116 (21.1) | 66 (20.2) | 47 (23.3) | 3 (14.3) | |
| 60–64 | 107 (19.5) | 61 (18.7) | 38 (18.8) | 8 (38.1) | |
| 65–69 | 74 (13.5) | 41 (12.6) | 33 (16.3) | 0 (0.0) | |
| ≥70 | 24 (4.4) | 14 (4.3) | 10 (5.0) | 0 (0.0) | |
| Indications, n (%) | | | | | |
| UKELD ≥49 | 490 (89.3) | 295 (90.5) | 176 (87.1) | 19 (90.5) | 0.23 |
| Recurrent ascites | 166 (30.3) | 79 (24.2) | 80 (39.6) | 7 (33.3) | <0.001 |
| Recurrent encephalopathy | 100 (18.2) | 57 (17.5) | 42 (20.8) | 1 (4.8) | 0.35 |
| HCC | 89 (16.2) | 59 (18.1) | 27 (13.4) | 3 (14.3) | 0.15 |
| Other | 61 (11.1) | 35 (10.8) | 26 (12.9) | 0 (0.0) | 0.46 |
| Previous TIPSS, n (%) | 21 (3.8) | 15 (4.6) | 6 (3.0) | 0 (0.0) | 0.36 |
| MELD, median (IQR) | 15 (11–20) | 16 (11–21) | 13 (10–17) | 17 (12–23) | <0.001 |
| UKELD, median (IQR) | 54 (51–58) | 55 (52–59) | 53 (50–56) | 54 (52–59) | <0.001 |

Deferred patients were excluded from statistical comparisons. Categorical variables were compared using the chi-square test. Continuous variables were compared using the Mann-Whitney *U* test.
HCC, hepatocellular carcinoma; IQR, interquartile range; MELD, Modified End-stage Liver Disease Score; TIPSS, transjugular intrahepatic portosystemic shunt; UKELD, United Kingdom End-stage Liver Disease Score.

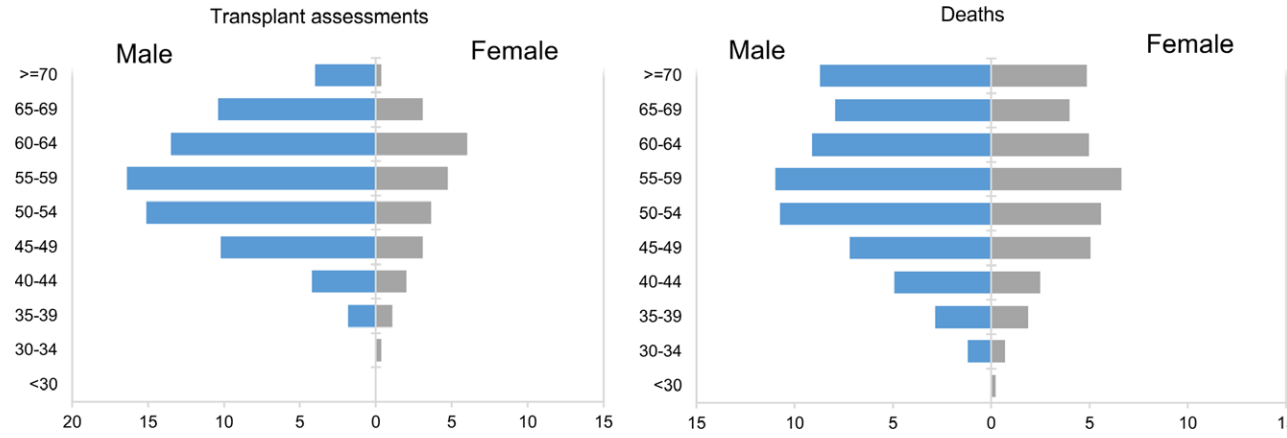


**FIGURE 1.** Age and sex distribution of UK transplant assessments (left) and deaths (right) from alcohol-related liver disease during the study period (August 1, 2020–July 31, 2021).

**TABLE 2.**

**Comparison of transplant assessment to deaths from ArLD by deprivation decile**

| Deprivation decile | Transplant assessments,[a] n (%) | People aged 20–74 y who died from ArLD, n (%) | Ratio assessments: deaths |
|---|---|---|---|
| 1 (most deprived) | 54 (12) | 1068 (19) | 1:20 |
| 2 | 47 (11) | 836 (15) | 1:18 |
| 3 | 53 (12) | 675 (12) | 1:13 |
| 4 | 45 (10) | 633 (11) | 1:14 |
| 5 | 51 (12) | 529 (9) | 1:10 |
| 6 | 42 (9) | 475 (8) | 1:11 |
| 7 | 43 (10) | 391 (7) | 1:9 |
| 8 | 33 (7) | 376 (7) | 1:11 |
| 9 | 45 (10) | 340 (6) | 1:8 |
| 10 (least deprived) | 30 (7) | 279 (5) | 1:9 |
| | 443 (100) | 5602 (100) | |

ArLD, alcohol-related liver disease.
[a]Percent based on all patients with a known deprivation decile.

The number of patients who were assessed for transplant (549) is approximately 10 times less than the total number of ArLD deaths for patients aged between 20 and 75 y in the study period (5602). There are multiple steps in the process of going on the liver transplant waiting list before the formal evaluation process starts, including recognition that a person has advanced liver disease and that they may benefit from liver transplantation and hence referral to a liver transplant center. It has been demonstrated that in some settings, patients with ArLD are less likely to be referred to a liver transplant center than patients with other causes of liver disease,[26] and specifically, physician-dependent variables contribute to a disparity in the rate of transplant referral.[27]

Female patients comprised only 24% of those assessed compared with 36% of patients who died from ArLD, suggesting that women are less likely to be referred for assessment for a liver transplant. This is particularly concerning when one notes that in England in 2020, women died from ArLD at significantly younger mean age years than men (men 57.0 [95% confidence interval, 56.7-57.4]; women 55.7 [95% confidence interval, 55.1-56.2]). A single-center study from the United States found that women had a lower likelihood of being listed for a liver transplant and of receiving a liver transplant once listed.[28] In our study, there was no sex bias in listing decisions.

There are several potential explanations for the lower proportion of women being considered for liver transplantation. It is well recognized that women are relatively more susceptible to alcohol-associated liver damage and that the relative risk of cirrhosis and liver-related mortality is significantly higher in women than in men.[29] Women are less likely to discuss alcohol problems with healthcare providers[30] and have less access to brief alcohol interventions.[31,32] Women with cirrhosis may be less likely to engage with interventions for alcohol use disorder.[33] These factors might result in female patients presenting with more advanced disease and without a period of stability and abstinence to facilitate transplant assessment. In the United Kingdom, women are 3 times more likely than men to experience common mental health problems.[34] Psychiatric comorbidities are common in patients with ArLD[19] and can increase the risk of alcohol relapse posttransplantation.[35] Only 1 patient in our cohort was declined listing due to psychiatric comorbidities potentially suggesting these patients were filtered by referring clinicians before formal transplant assessment. Women are more likely to be carers and less likely to have support themselves,[36,37] which might also contribute to the sex disparities observed in this study. Finally, unconscious bias, leading to female patients having poorer access to care than their male counterparts, has been described in other realms of medicine.[38]

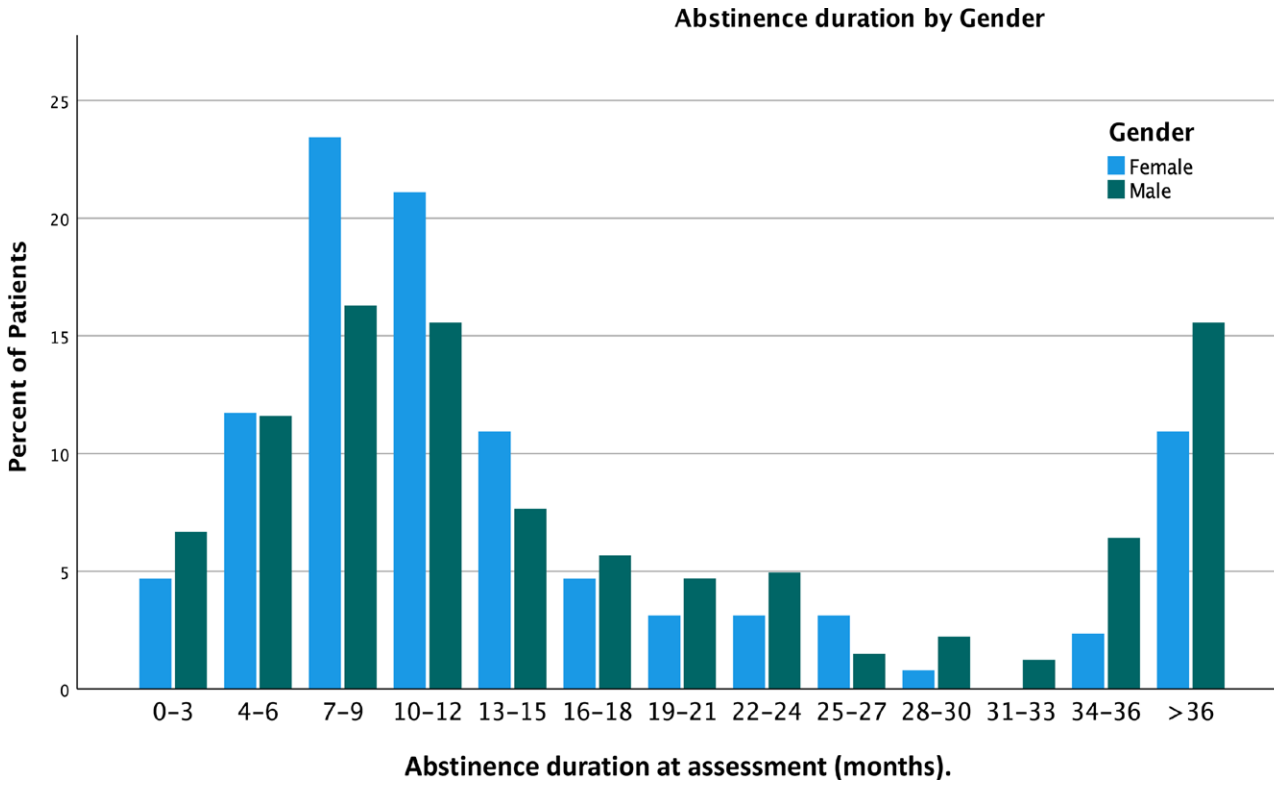


**FIGURE 2.** Abstinence duration at the time of assessment (months).

Examining the ratios between the known mortality rates by social deprivation decile and transplant assessment data available from this study suggests that patients from the least deprived decile undergo formal transplant assessment at double the rate compared with the most deprived decile. Perhaps unsurprisingly, psychosocial considerations have been shown to have more impact on liver transplant evaluation in patients with ArLD compared with those with other causes of liver disease.[39] Yilma et al[40] looked at factors associated with referral to liver transplant centers from 3 large urban safety net hospitals in the United States and found in multivariable analysis that race, uninsured status, and specific hospital site were all associated with lower odds of referral.[40] ArLD in the United Kingdom is a condition of stark inequalities. In areas experiencing the greatest levels of deprivation, premature deaths from liver disease are almost 4 times higher than in the least deprived areas.[41] Patients with cirrhosis often have poor family and social support, which is linked to increased mortality.[42] Those from the most deprived backgrounds may also have fewer socioeconomic resources to enable them to remain abstinent and support medication adherence after liver transplantation.[43] We found no evidence, however, that deprivation affected the chances of getting on to the transplant waiting list once assessed.

One UK liver transplant center has previously reported on transplant assessment data for all causes of liver disease (2017–2019), of which 50% were patients with ArLD.[44] They reported a listing rate of 38% for all patients, which is compared to 59% for our cohort. This suggests that liver transplant candidates with ArLD, once they reach the point of being formally considered for liver transplantation, may be more likely to be listed for a transplant compared with a mixed cohort of all causes. This may be because the trajectory of decompensated ArLD in the context of abstinence is more easily predictable than certain conditions and also because there may have been some filtering of appropriate candidates for transplantation before reaching formal transplant assessment.

More than one-third of patients assessed for transplant were ultimately not listed. The most common reason for the decline was medical frailty. This could suggest that referrals for transplant assessment are delayed for some patients or may reflect the background comorbid burden in this patient group, especially given that alcohol has numerous adverse health effects beyond its impact on the liver.[45,46] In particular, cardiac comorbidity is common[47] and is a frequent contraindication to liver transplantation. Patients with ArLD are also known to have higher rates of smoking,[48] with the associated additional cardiovascular and pulmonary sequelae. Nutritional issues are frequently a concern in patients with advanced liver disease, and this can be compounded in those patients with ArLD. Patients with scope for optimization may benefit from "prehabilitation" before a potential transplant.[49,50] This could improve nutritional status, reduce frailty, and therefore reduce perioperative mortality risk, potentially improving the opportunity for liver transplantation with a good outcome.

The next most common reasons for patients not being listed were that they were either too early in their disease (20%) or were felt to have the potential to recover without the need for liver transplantation (18%). Clinical improvements after alcohol abstinence are most likely to be seen in the first 3 mo,[9] and 4% of patients in this study had abstinence periods under 3 mo. Nevertheless, guidelines emphasize early referral for consideration for transplantation, which may explain patients being assessed before reaching the threshold of 3 mo of alcohol abstinence.

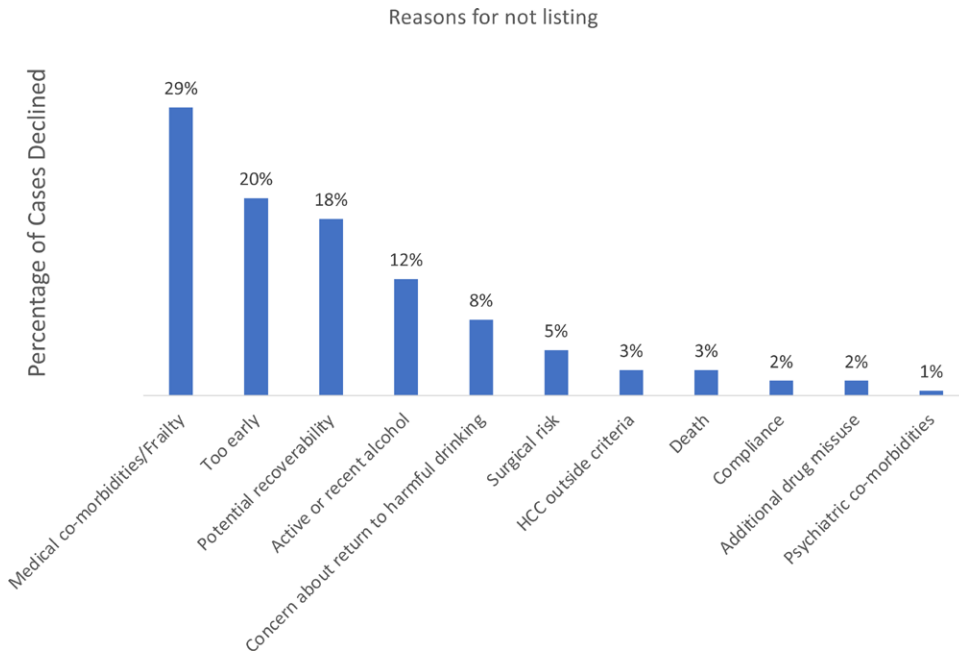


**FIGURE 3.** Reasons for not listing for transplant. HCC, hepatocellular carcinoma.

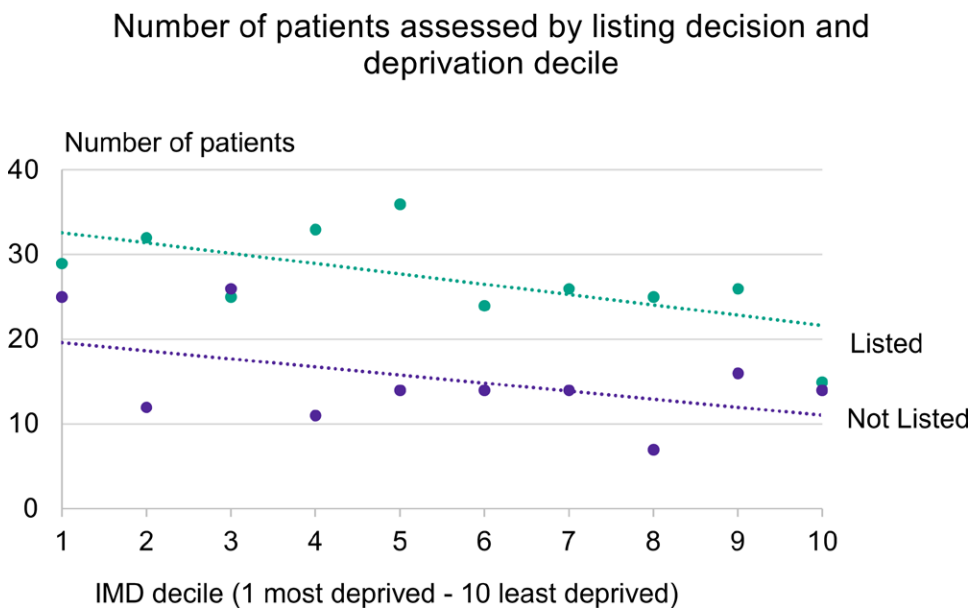


**FIGURE 4.** Transplant assessments by listing decision and deprivation decile. IMD, index of multiple deprivation.

We were interested in the degree to which the perceived risk of return to alcohol consumption or concerns about future compliance contributed to listing outcomes. Clinicians cited concern about recent alcohol use or future compliance in 22% of cases declined for liver transplant in this study. Integrated care for patients with alcohol-related cirrhosis, which combines specialist input from psychiatrists or alcohol support teams and hepatologists, has been shown to be effective not only in helping patients to achieve abstinence but also in improving liver disease scores and reducing hospital use.[35,51] A recent systematic review confirmed the value of Integrated medical and psychiatric care in transplant patients.[52]

Recurrent ascites was the only transplant indication significantly associated with a lower likelihood of being listed for a liver transplant, with no differences seen for patients referred with high UKELD scores, encephalopathy, HCC, or other indications. The reasons for this are unclear because the only other factors that predicted listing (MELD and UKELD) showed no significant differences between patients with ascites and those without. It is possible that these patients were referred for transjugular intrahepatic portosystemic stent shunt or that ascites signaled patients who were frailer or had other clinical contraindications for transplantation.

## Strengths and Weakness

The strengths of this study include the data being collected prospectively and the inclusion of all 7 UK liver transplant

centers with all patients assessed for a contemporaneous 1-y period. It, therefore, provides a complete profile of all patients with ArLD assessed for liver transplant in the United Kingdom over the study period. We have also been able to compare the transplant assessment data to national data on deaths from ArLD over the same period. The weaknesses of this study include the lack of specific data on referral sites and patient comorbidities, including psychiatric comorbidities. We also lacked details on social support, marital status, engagement with alcohol services, and other potential indicators of risk of alcohol relapse. The period covered by the study (August 1, 2020–July 31, 2021) overlapped with the COVID-19 pandemic. The impact of the pandemic on liver disease care[53-55] as well as access to critical care beds[56] may mean that this time period may not be fully representative of previous and future cohorts.

Many potential transplant candidates will be unable to achieve and maintain abstinence from alcohol or will have other clear contraindications to liver transplant. This study, therefore, does not capture the many patients for whom a decision about suitability for transplantation was made before the transplant unit multidisciplinary team meeting. We used the International Classification of Disease Code 10 Code K70 to identify deaths from ArLD. This code includes all stages of ArLD, which should be considered when comparing that data to our cohort of patients presenting for transplant assessment. These limitations may explain the disparities observed in the proportion of women and patients from areas of high deprivation recorded in this study. Interpretation of the findings is also limited without the context provided by similar data in other cohorts with different causes of liver disease. Meaningful interpretation of individual centers' listing rates would require a more detailed understanding of the filtering process in each unit before formal assessment for liver transplantation and a detailed analysis of the individual patient cohorts, which was beyond the scope of this study.

## CONCLUSIONS

This study provides the first complete national cohort of patients with ArLD being considered for liver transplantation. The study provides granular data about the pooled national demographics, range of indications, conclusions from the transplant evaluation process, and reasons given for decisions made. The underrepresentation of women and those from the most deprived sections of the population in our study suggests that there may be upstream components of the referral process that disadvantage certain patients, and this requires further investigation.

Collection of relevant data for patients assessed for liver transplantation will be critical to ensuring consistency, fairness, and transparency and identifying factors such as geography, sex, ethnic background, or social status that might influence access to liver transplantation before the point of listing. This data collection should be expanded to include all causes of liver disease. Future work should also follow up on patients who are declined for transplant to monitor their outcomes and ensure they receive appropriate support, including access to palliative care. Finally, examining the clinical course of patients before referral for potential liver transplantation may help us understand whether earlier referrals or interventions could positively affect patient outcomes and provide greater access to timely liver transplantation.

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