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Background	Study Objective	Accuracy																																																																																																																																		
<p>AUDIT-C - the first three questions of the 10-item Alcohol Use Disorders Identification Test (AUDIT) are commonly used as a brief screening tool for alcohol-related problems in hospital, general practice and community settings.¹</p> <p>The tool cannot be administered without explaining what a “standard drink” means. AUDIT guidelines define “standard drink” as an amount of any alcoholic product containing 10 grams of ethanol and recommend explaining equivalent alcohol product volumes to respondents.²</p> <p>In Sri Lanka, the “Standard drink” concept is not in use as in many other middle - income countries. It challenges estimating consumption in Western cultures too.³</p> <p><u>Take a moment!</u></p> <p>Find out your alcohol consumption for the past year using above definition of a “drink”.</p> <p>Q.1. How often do you have a “drink” containing alcohol?</p> <table border="1"> <thead> <tr> <th>Score</th> <th>Responses</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Never</td> </tr> <tr> <td>1</td> <td>Less than monthly</td> </tr> <tr> <td>2</td> <td>2-4 times a month</td> </tr> <tr> <td>3</td> <td>2-3 times a week</td> </tr> <tr> <td>4</td> <td>4 or more times a week</td> </tr> </tbody> </table> <p>Q.2. How many “drinks” do you have on a typical day when you are drinking?</p> <table border="1"> <thead> <tr> <th>Score</th> <th>Responses</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>1 -2 drinks</td> </tr> <tr> <td>1</td> <td>2-3 drinks</td> </tr> <tr> <td>2</td> <td>4-6 drinks</td> </tr> <tr> <td>3</td> <td>7-9 drinks</td> </tr> <tr> <td>4</td> <td>10 or more drinks</td> </tr> </tbody> </table> <p>Q.3. How often do you have 6 or more “drinks” on one occasion?</p> <table border="1"> <thead> <tr> <th>Score</th> <th>Response</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Never</td> </tr> <tr> <td>1</td> <td>Less than monthly</td> </tr> <tr> <td>2</td> <td>monthly</td> </tr> <tr> <td>3</td> <td>Weekly</td> </tr> <tr> <td>4</td> <td>Daily or almost daily</td> </tr> </tbody> </table> <p>Were you able to estimate your consumption?</p> <p>In my pilot study, I could not administer the above questions and responses due to lack beverage-specific standard drink sizes, visual aids and ethanol content of illicit products, and habit of mixing with non-alcoholic drinks.</p>	Score	Responses	0	Never	1	Less than monthly	2	2-4 times a month	3	2-3 times a week	4	4 or more times a week	Score	Responses	0	1 -2 drinks	1	2-3 drinks	2	4-6 drinks	3	7-9 drinks	4	10 or more drinks	Score	Response	0	Never	1	Less than monthly	2	monthly	3	Weekly	4	Daily or almost daily	<p>To develop and incorporate beverage-specific visual aids and a conversion chart to improve response accuracy of the second and third questions and responses of the Alcohol Use Disorders Identification Test (AUDIT)</p> <p>Methods</p> <p>Step 1: Determine common alcohol products, representative drink sizes and containers popular in the study population</p> <p>Step 2: Develop beverage-specific visual aids</p> <p>Step 3: Construct the beverage-specific conversion chart (Table 1)</p> <p>Step 4: Replace “standard drinks” in the questions with “respondents’ drinks” (Table 2)</p> <p>Step 4: Administer the new tool to a sample of males before and after the graduated quantity-frequency questionnaire and the Composite International Diagnostic Interview. The validation procedure has been published elsewhere.⁴</p> <p>Results</p> <p>After obtaining ethical clearance from the Ethical Committee of the Faculty of Medicine of University of Kelaniya, I conducted the study with a sample of 238 adult males in the Wattala administrative division in the Gampaha district in Sri Lanka in 2006.</p> <p>Table 1: Conversion of representative ethanol percentages into “standard drinks”</p> <table border="1"> <thead> <tr> <th>Alcoholic beverage</th> <th>Ethanol in ml per 100ml</th> <th>Conversion into grams (%*0.8)</th> <th>Number of “standard drinks” in 100ml</th> </tr> </thead> <tbody> <tr> <td>Spirits</td> <td>41%</td> <td>33</td> <td>3.3</td> </tr> <tr> <td>Arrack</td> <td>33%</td> <td>26</td> <td>2.6</td> </tr> <tr> <td>Illicit liquor</td> <td>21% (median of 12 samples)</td> <td>17</td> <td>1.7</td> </tr> <tr> <td>Strong beer</td> <td>7.7%</td> <td>6</td> <td>0.6</td> </tr> <tr> <td>Beer /toddy</td> <td>5%</td> <td>4</td> <td>0.4</td> </tr> </tbody> </table> <p>Table 2: Replacing “standard drinks” with “respondent drinks” in the Q.2 and Q.3</p> <p>Q. 2. What do you usually drink? How many glasses of (show the relevant visual) or bottles do you drink before mixing with anything on a typical day when you are drinking? (Instructions to the interviewer: Circle the relevant score).</p> <table border="1"> <thead> <tr> <th>Score</th> <th>Spirits</th> <th>Arrack</th> <th>Illicit liquor</th> <th>Strong beer</th> <th>Toddy</th> <th>Beer</th> </tr> </thead> <tbody> <tr> <td></td> <td> 100ml</td> <td> 1.25 L</td> <td> 100ml</td> <td> 750ml</td> <td> 100ml</td> <td> 750ml</td> </tr> <tr> <td>4</td> <td>≥3 100ml glasses</td> <td>≥4 100ml glasses</td> <td>1 or more bottles</td> <td>2 or more bottles</td> <td colspan="2">4 or more bottles</td> </tr> <tr> <td>3</td> <td>≥2 100ml glasses</td> <td>3 100ml glasses</td> <td>4-6 100ml glasses or 1/2 bottle</td> <td>1-2 bottles</td> <td colspan="2">3-4 bottles</td> </tr> <tr> <td>2</td> <td>1-2 100ml glasses</td> <td>2 100ml glasses</td> <td>3-4 100ml glasses</td> <td>1 bottle</td> <td colspan="2">2-3 bottles</td> </tr> <tr> <td>1</td> <td>1 100ml glasses</td> <td>1-2 100ml glasses</td> <td>2-3 50ml glasses</td> <td>2/ 250ml glasses</td> <td colspan="2">1-2 bottles</td> </tr> <tr> <td>0</td> <td><1 50ml glasses</td> <td><1 100ml glasses</td> <td><1 100ml glasses</td> <td>1/ 250ml glass</td> <td colspan="2">1 bottle</td> </tr> </tbody> </table> <p>Q.3. How often do you have (choose the relevant “drink” size from the dark green row of the Question 2) on one occasion?</p> <table border="1"> <thead> <tr> <th>Response</th> <th>Daily or almost daily</th> <th>Weekly</th> <th>Monthly</th> <th>Less than monthly</th> <th>Never</th> </tr> </thead> <tbody> <tr> <td>Score</td> <td>4</td> <td>3</td> <td>2</td> <td>1</td> <td>0</td> </tr> </tbody> </table>	Alcoholic beverage	Ethanol in ml per 100ml	Conversion into grams (%*0.8)	Number of “standard drinks” in 100ml	Spirits	41%	33	3.3	Arrack	33%	26	2.6	Illicit liquor	21% (median of 12 samples)	17	1.7	Strong beer	7.7%	6	0.6	Beer /toddy	5%	4	0.4	Score	Spirits	Arrack	Illicit liquor	Strong beer	Toddy	Beer		 100ml	 1.25 L	 100ml	 750ml	 100ml	 750ml	4	≥3 100ml glasses	≥4 100ml glasses	1 or more bottles	2 or more bottles	4 or more bottles		3	≥2 100ml glasses	3 100ml glasses	4-6 100ml glasses or 1/2 bottle	1-2 bottles	3-4 bottles		2	1-2 100ml glasses	2 100ml glasses	3-4 100ml glasses	1 bottle	2-3 bottles		1	1 100ml glasses	1-2 100ml glasses	2-3 50ml glasses	2/ 250ml glasses	1-2 bottles		0	<1 50ml glasses	<1 100ml glasses	<1 100ml glasses	1/ 250ml glass	1 bottle		Response	Daily or almost daily	Weekly	Monthly	Less than monthly	Never	Score	4	3	2	1	0	<p>AUDIT-C’s internal consistency exceeded the satisfactory level of 0.7. Both - AUDIT-C and AUDIT-3 (the third question) - were excellent in discriminating low-risk drinkers from those with high-risk drinking and alcohol use disorders (Table 3).</p> <p>Table 3: Cronbach’s Alpha and AUROCs of AUDIT-C and AUDIT-3</p> <table border="1"> <thead> <tr> <th>Questions</th> <th>Cronbach’s alpha</th> <th>AUROC</th> </tr> </thead> <tbody> <tr> <td>AUDIT – C</td> <td>0.84</td> <td>0.97 (0.95-0.98)</td> </tr> <tr> <td>AUDIT-3</td> <td>-</td> <td>0.99 (0.98-0.99)</td> </tr> </tbody> </table> <p>Conclusion</p> <p>The new second and third AUDIT questions are reliable and valid for use in Sri Lanka. The new tool relieve interviewer and respondent burden of estimating ethanol consumption in terms of “standard drinks”.</p> <p>The methodology could be adapted to any country setting.</p> <p>References</p> <ol style="list-style-type: none"> Dawson, D.A., Smith, S. M., Saha, T. D., Rubinsky, A. D. and Grant, B. F. (2012). Comparative Performance of AUDIT-C in screening for DSM-IV and 5 alcohol use disorders. <i>Drug Alcohol Dependence</i>, 126 (3),384-388. Babor, T. F., Higgins-Biddle, J. C., Saunders. J.B. and Monteiro, M.G. (2001). AUDIT-Guidelines for use in primary care. Second Edition, <i>World Health Organization</i>. Geneva. p.32. Kerr, W. C. and Stockwell, T., (2011). Understanding Standard Drinks and Drinking Guidelines. <i>Drug and Alcohol Review</i>. 31, 200-205. De Silva, P., Jayawardene, P., and Pathmeswaran, A. (2008). Concurrent validity of the Alcohol Use Disorders Identification Test (AUDIT). <i>Alcohol and Alcoholism</i> 43,1 (49-50). <p>Acknowledgements</p> <p>A. Pathmeswaran, Professor of Public Health, Faculty of Medicine, University of Kelaniya, Sri Lanka P. Jayawardana, Professor of Public Health, Faculty of Medicine, University of Kelaniya, Sri Lanka Cheryl J. Cherpitel, Alcohol Research Group, Public Health Institute, Emeryville, California. Thomas K. Greenfield, Alcohol Research Group, Public Health Institute, Emeryville, California. Shafi U Bhuiyan, A/Professor, School of Occupational and Public Health, Ryerson University, Toronto. Joyce Nyhof-Young, Associate Professor, Family & Community Medicine, Faculty of Medicine, University of Toronto.</p> <p>Contact</p> <p>prasantha.silva@gmail.com</p> <p>https://linkedin.com/in/ethigeprasanthadesilva/</p>	Questions	Cronbach’s alpha	AUROC	AUDIT – C	0.84	0.97 (0.95-0.98)	AUDIT-3	-	0.99 (0.98-0.99)
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