

**Table 2: Features of Seminal Tobacco Dependence Measures as Applied to Non-Cigarette Products and LMIC Contexts**

	<b>Author</b>	<b>Year</b>	<b>Central Definition of Dependence</b>	<b>Method(s) of Development</b>	<b>Number of Items</b>	<b>Features of Interest</b>	<b>Tobacco Product/s</b>	<b>Countries</b>	<b>Associated Articles</b>
<b>Reason for Smoking Scale</b>	Horn & Waingrow	1966	Motivations for smoking are either positive or negative affect smoking, habit smoking, and psychological addiction smoking. Further research has added other dimensions.	Derived from Tomkins model(12-14)	23	stimulation; pleasure; sensorimotor; manipulation; habit; negative affect reduction; psychological addiction	cigarettes	United States(13)	(12-14,32,33,46)
<b>Fagerström Tolerance Questionnaire / Fagerström Test for Nicotine Dependence / Heaviness of Smoking Index</b>	Fagerström	1978	Compulsive use of tobacco: "Compulsive use includes a present state of being unable to quit or stay quit or a past state of difficulty in quitting characterized by withdrawal and/or craving"(5)	Developed to assess physical dependence to tobacco; eight items believed to reflect the principles of addiction	8	time to first cigarette; nicotine yield; inhaling or not; number of cigarette smoked per day; difficulty abstaining from behavior; smoking when ill	cigarettes, smokeless tobacco(29,50,53)	Spain(34); Japan(35); Argentina(42); France(36); Korea(37); Turkey(38); China(39,40); Italy(41)	(24,29,34-43,51,53)(5,27,28,50)

<b>Diagnostic and Statistical Manual</b>	American Psychiatric Association [DSM-IV-TR]	2000	A maladaptive pattern of substance use, leading to clinically significant impairment or distress. Specification needed of "with physiologic dependence" (i.e. tolerance and withdrawal) or "without physiologic dependence"(52)	Minor modifications of DSM criteria for alcoholism for the 3rd version of the DSM; little evidence of the assessment of validity prior to publishing DSM-ND criteria(54)	7	tolerance; withdrawal; using/engaging in behavior more than intended; difficulty controlling use/behavior; spending a great deal of time (obtaining or using nicotine); giving up other activities; using/behaving despite harm	all substances	United States(52)	(24,51,52,54)
<b>Hooked On Nicotine Checklist</b>	DiFranza et al.	2002	Individual's loss of autonomy over tobacco use: possible through differing mechanisms (neuropharmacological, psychological, and/or behavioral); onset of dependence begins the moment autonomy is lost	Developed using three addiction theories as basis: self-medication, negative reinforcement; incentive-sensitization; evaluation of checklist occurred through a prospective study with adolescents; focus groups showed content validity	10	inability to quit; feeling addicted; strong cravings; difficulty in abstaining in places where smoking is not allowed; when abstaining: difficulties concentrating, irritability, strong need or urge, nervous, restlessness, anxious	cigarettes, smokeless tobacco(10)	United States(4,31,49,55-57); Taiwan (Chinese)(39); Argentina(42)	(10,42)
<b>Nicotine Dependence Syndrome Scale</b>	Shiffman, Waters, & Hickcox	2004	Edwards and Gross syndromal conceptualization of dependence (multi-dimensional)	initial items developed from conception of dependence for alcohol; focus groups were conducted to discuss experience of dependence; upon expert review, final survey items were re-tested among focus group participants	23	restlessness, irritability, cravings, loss of control, avoiding places where smoking is not permitted/acceptable, tolerance, regularity of smoking, smoking upon waking	cigarettes, specialty cigarettes(63)	United States(17,63); Finland(44); Spain(45)	(44,45,63)

<p style="text-align: center;"><b>Wisconsin Inventory of Smoking Dependence Motives</b></p>	<p>Piper et al.</p>	<p>2004</p>	<p>Dependence is multifactorial; define dependence on the basis of motivations as indicators of the "underlying latent variable of tobacco dependence"</p>	<p>Review of literature to identify 13 different motives for drug use behavior, experts evaluated these motives and domains were revised; items were written corresponding to the domains</p>	<p>68</p>	<p>affiliative attachment; automaticity; behavioral choice-melioration; cognitive enhancement; craving; cue exposure-associative process; loss of control; negative reinforcement; positive reinforcement; social environmental goods; taste and sensory properties; tolerance; weight control</p>	<p>cigarettes</p>	<p>United States(25); Hungary(47)</p>	<p>(23,32,33,46,47)</p>
<p style="text-align: center;"><b>Lebanon Waterpipe Dependence Scale</b></p>	<p>Salameh, Waked, Aoun</p>	<p>2008</p>	<p>Psychological and physical effects of nicotine</p>	<p>15 items were taken from the FTND and DSM-IV and adapted while 6 items were added to cover social and psychological dimensions; scale validated and cross validated through face to face and phone interviews, as well as CO and salivary cotinine levels with three separate samples</p>	<p>11</p>	<p>times able to stop water for &gt;7 days; percent of income on waterpipe smoking; number of days without waterpipe; number of waterpipes smoked per week; smoking waterpipe to relax or improve morale; smoking waterpipe when ill; smoking alone; not eating for waterpipe; waterpipe smoking for pleasure; smoking to please others</p>	<p>waterpipe</p>	<p>Lebanon(24)</p>	<p>(24,59)</p>

<b>Autonomy Over Smoking Scale</b>	DiFranza, Wellman, Sanouri, Sabiston	2009	Loss of autonomy indicates intrinsic obstacles to cessation; individual cannot quit smoking without effort	HONC with the added assessment of nicotine withdrawal, cue-induced craving, and physiological dependence; 30 candidate items generated following review of other instruments; interviews and focus groups conducted; 12 items selected for adult field testing	12	withdrawal: impatience, urges to smoke, lose temper, nervous/anxious; rely: to focus attention, to take mind off being bored, to deal with stress; "I would go crazy if I couldn't smoke"; crave: when feeling stressed, when seeing others smoke, when smelling smoke, after eating	cigarettes, smokeless tobacco(10)	United States(16); Germany(49);Argentina(42)	(10,42,49)
<b>Self-Administered Nicotine-Dependence Scale</b>	Davis et al.	1994	Dependence manifests along the following domains: (1) loss of control; (2) consequences of use; (3) social skills deficit; (4) self-efficacy; (5) social support for smoking; and (6) concern for healthy lifestyle	Relied on clinical experiences, research and theorizing to develop items concerning chemical dependence, evaluated 79-item experimental questionnaire	32	questionnaire items covered the following domains: "(1) loss of control; (2) consequences of use; (3) social skills deficit; (4) self-efficacy; (5) social support for smoking; and (6) concern for healthy lifestyle	cigarettes	United States(20)	
<b>Tobacco Dependence Screener</b>	Kawakami, Takatsuka, Inaba, & Shimizu	1999	"Tobacco/nicotine dependence is defined as a cluster of cognitive, behavioral, and physiological symptoms for which the individual attributes use of tobacco despite significant tobacco-related problems"(55)	Used selection of 10 abbreviated questions from tobacco use section of the WHO-CIDI, the DSM-III and DSM-IV.	10	smoking more than he/she intended to; desire to quit; unsuccessful effort to quit; craving; withdrawal symptoms; smoking to avoid withdrawal symptoms; smoking despite illness; smoking despite health problems and/or mental problems; feeling dependent on tobacco; giving up important activities for smoking	cigarettes	Japan(23)	

<b>Cigarette Dependence Scale</b>	Etter, Le Houezec, & Perneger	2003	Use DSM-IV and ICD-10 definitions of dependence	Qualitative surveys informed scale development with current and former smokers in addition to DSM and ICD-10 definitions of tobacco dependence, after field testing 153 items with two adult populations, 114 items were decided upon for preliminary testing, items were then eliminated to reduce this set	12 (5 item version also available)	self-rated dependence; time to first cigarette; smoke too much; always having cigarettes; urge to smoke every few hours, quitting would be difficult; smoke despite risks, and more	cigarettes	Switzerland(18, 30); France(30)	
<b>Glover-Nilsson Smoking Behavioral Questionnaire</b>	Glover, Nilsson, Westin, Glover, Laffin, & Persson	2005	Questionnaire created in order to assess the extent to which behavioral patterns influence smoking dependence	Four tobacco treatment experts developed questionnaire items independently resulting in 39 items; panel then asked to eliminate duplicate items; the remaining 18 items; items were further reduced using data from 8 tobacco research trial conducted in Spain, Sweden, Switzerland, and the United States.	11	importance of habit; cigarette manipulation; attempts to keep mouth busy to prevent smoking; using cigarette as reward; difficulty concentrating without cigarette; environmental cue; lighting up without craving; safety/confidence from holding cigarette, and more	cigarettes	Spain, Sweden, Switzerland, the United States(22)	
<b>Kano Test for Social Nicotine Dependence</b>	Yoshii et al.	2006	Social nicotine dependence as psychological dependence typified by a distorted cognition of smoking; can apply to smokers or non-smokers	Developed by a working group of 20 members; questions and point allocation discussed over e-mail mailing list; first version tested with smokers, ex-smokers and non-smokers and edited	10	beliefs around smoking and whether or not smoking is an acceptable behavior (denying ill effects, rationalization/justification of smoking as cultural/social behavior)	cigarettes	Japan(19)	

				to improve questionnaire					
<b>DSM V Nicotine Use Disorder</b>	Chung et al	2012	Combines concepts of substance abuse and dependence as well as craving	Combination of DSM IV substance abuse criteria, DSM IV dependence criteria and a new craving criterion. Proposed criteria seen to represent a single dimension. Proposed diagnostic threshold: two (of 11) symptoms.	11	Substance abuse criteria: role obligations, hazardous use, interpersonal problems; Dependence criteria: tolerance, withdrawal, using more than intended, difficulty controlling use, much time spent obtaining or using nicotine, giving up other activities, using despite harm; Craving (strong desire to use)	cigarettes	United States(15)	