

# An Overview of Different Scales Used in Tobacco Cessation

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## Abstract

Cigarette smoking is still a major cause of many preventable diseases. The pharmacologic effect of nicotine plays a crucial role in tobacco addiction. When issues around tobacco use are considered, “nicotine addiction” can be regarded as a roadblock that needs to be overcome. There are a number of questionnaires that have been designed specifically to measure tobacco dependence and few among them will be discussed in this article.

**Keywords:** Nicotine dependence, Stanford dependence inventory, tobacco scales

## INTRODUCTION

Usage of tobacco products is increasing day by day and it remains one of the biggest single causes of preventable morbidity and mortality. Government has taken many efforts to increase the quit rate of tobacco among people by selling tobacco products under 18 years of age, by displaying warning labels in tobacco packets, increasing taxation of tobacco products, and Prohibiting direct or indirect advertisement of tobacco products. As we all know that smoking is an addiction to nicotine and such as all addictions, it is difficult to overcome and that most smokers want to quit but need several attempts.<sup>[1]</sup>

For effective preventive care and research purpose, assessing the tobacco dependence is needed. There are two traditions of measurements in clinical sciences:

- Clinimetric tradition and
- Psychometric tradition (STROSA).

The clinimetric approach relies on doctors’ expertise and patients’ experience to define a set of signs and symptoms relevant for a given disease. The logic of a clinimetric instrument is grounded in medical opinion, and the items forming the instrument can be quite disparate, as long as they are clinically connected. In contrast, the psychometric approach seeks to identify a correlated set of items that reflect, as much as possible, an unobserved latent variable. The logic of a psychometric instrument relies heavily on statistical properties, such as reliability and validity. Thus far, addiction to tobacco has been assessed by clinimetric scales only. The

most frequently used instruments are the Fagerstrom tolerance questionnaire (FTQ).

These scales are used to assess the frequency and quantity of tobacco consumed, biochemical markers (such as levels of cotinine, a by-product of nicotine metabolism, in the saliva), and questionnaire measures of self-reported smoking behavior.<sup>[2]</sup>

When a tobacco user wants to quit the habit and visits the cessation clinic, he will undergo various interventions such as:

- Cold turkey method
- Behavior counseling
- Behavior counseling + Nicotine replacement therapy (NRT)
- Behavior counseling + Medication
- Behavior counseling + Medication + NRT.

## COLD TURKEY METHOD

This method can be used for any addiction either be any drug addiction, alcohol addiction, tobacco use, or even gambling.

Most people try to go “cold turkey,” which means they decide to give up tobacco abruptly and totally all at once.

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The “cold turkey” approach can cause mild-to-severe nicotine withdrawal symptoms.

Medication or over-the-counter aids such as nicotine patches or gums help to mitigate these effects, and can therefore double or even triple your chance of success.

Experts say chances of success depend on several factors, not just a person’s willpower. The extent of your addiction, your daily habits and routines, and the amount of support you get from friends and family can all have a big effect.

### VARIOUS SCALES TO ASSESS TOBACCO DEPENDENCE

It is important to assess the dependence of tobacco consumers to provide effective treatment to quit the habit.

The most commonly used scale is the Fagerstrom scale which is separately available for both smoking and smokeless tobacco users.<sup>[3]</sup>

### FAGERSTRÖM TEST FOR NICOTINE DEPENDENCE

In a study conducted by Berlin *et al.* on comparison of the Fagerström test for cigarette dependence (FTCD) and Cigarette Dependence Scale (CDS-5) in a treatment-seeking sample of pregnant smokers, it was concluded that the FTCD, but not CDS-5, was significantly associated with saliva cotinine concentration and also with craving and to less extent with withdrawal scores [Table 1].<sup>[4]</sup>

Although the scale is widely adopted in research as well as clinical settings, reports examining its psychometric properties have shown moderate reliability and validity.<sup>[5]</sup>

### NICOTINE DEPENDENCE SCALE FOR ADOLESCENTS

This scale was developed by Nonnemaker, *et al.*

This is a brief 6-item instrument designed to measure nicotine dependence. Items were generated from the FTQ (Fagerstrom, 1978; Fagerstrom and Schneider, 1989) and the Nicotine Dependence Syndrome Scale (Shiffman *et al.*, 1995). It is used for adolescents, current smokers, average age 15 years, and grades 6–11. The scale was validated using data from the American Legacy Longitudinal Tobacco Use Reduction Study. This instrument was developed primarily for survey research purposes; clinical utility is limited. Cutoffs for classifying respondents as dependent or not dependent have not been established. This instrument adds to a limited literature studying the measurement of nicotine dependence in adolescent populations. It was designed to be a short self-report measure of an adolescent’s level of dependence on a continuous scale. It can be useful for survey research and for evaluating research models of smoking behavior.<sup>[6]</sup>

### NICOTINE DEPENDENCE SCALE FOR ADOLESCENTS

Do you think you would be able to quit smoking cigarettes if you wanted to?

**Table 1: Fagerstrom scale for smokers**

Questions	Answers	Points
How soon after you wake up do you smoke your first cigarette? (min)	Within 5	3
	6-30	2
	31-60	1
	After 60	0
Do you find it difficult to refrain from smoking places where it is forbidden? (e.g., in church, at the library, in cinemas, etc.,)	Yes	1
	No	0
Which cigarette would you hate most to give up?	The first one in the morning	1
	All others	0
How many cigarettes do you smoke each day?	10 or less	0
	11-20	1
	21-30	2
	31 or more	3
Do you smoke more frequently during the first hours after waking than during the rest of the day	Yes	1
	No	0
Do you smoke if you are so ill that you are in bed most of the day?	Yes	1
	No	0

**Table 2: Level of dependence and treatment for smokers**

Scores on Fagerstrom test	Level of dependence	First line of treatment	Second line of treatment
0-2	Very low dependence	Psychological or behavioral intervention	
3-5	Medium dependence	Psychological or behavioral intervention	NRT (2 mg) (nutritional supplement)
6-7	High dependence	NRT (2 mg) along with psychological or behavioral intervention	Pharmacological intervention
Above 8	Very high dependence	NRT (4 mg) along with psychological or behavioral intervention	

NRT: Nicotine replacement therapy

- a. I do not smoke now
- b. Definitely yes
- c. Probably yes
- d. Probably not
- e. Definitely not.

How soon after you wake up do you usually smoke your first cigarette?

On a weekday (Monday to Friday)?

- a. I do not smoke now
- b. Less than 15 min
- c. 15–30 min
- d. More than 30 but <60 min
- e. 1–2 h
- f. More than 2 h but less than half a day
- g. More than half a day

**Table 3: Fagerström scale for smokeless tobacco users**

Questions	Answers	Points
How soon after you wake up to do you place your first dip? (min)	Within 5	3
	6–30	2
	31–60	1
	After 60	0
How often do you intentionally swallow tobacco juice?	Always	2
	Sometimes	1
	Never	0
Which chew would you hate most to give up most?	The first one in the morning	1
	Any other	0
		0
How many cans/pouches do you chew per week?	More than 3	2
	2-3	1
	1	0
Do you chew more frequently during the first hour after awakening than during the rest of the day?	Yes	1
	No	0
Do you chew if you are so ill that you are in bed most of the day?	Yes	1
	No	0

**Table 4: Level of dependence and treatment for smokeless tobacco users**

Scores on Fagerstrom test	Level of dependence	First line of treatment	Second line of treatment
0-4	Very low dependence	Psychological or behavioral intervention	
5-8	Medium dependence	Psychological or behavioral intervention	NRT (2 mg) (nutritional supplement)
9-10	High dependence	NRT (2 mg) along with psychological or behavioral intervention	NRT (4 mg)
Above 10	Very high dependence	NRT (4 mg) along with Psychological or behavioral intervention	Pharmacological intervention

NRT: Nicotine replacement therapy

h. I do not smoke during the weekdays.

How soon after you wake up do you usually smoke your first cigarette?

During the weekend?

- I do not smoke now
- Less than 15 min
- 15–30 min
- More than 30 but <60 min
- 1–2 h
- More than 2 h but less than half a day
- More than half a day
- I do not smoke during the weekends.

If you are sick with a bad cold or sore throat, do you smoke cigarettes?

- I do not smoke now
- No, I stop smoking when I am sick
- Yes, but I cut down on the amount I smoke
- Yes, I smoke the same amount as when I'm not sick.

How true is this statement for you? When I go without a smoke for a few hours, I experience craving:

- I do not smoke now
- Not at all true
- Not very true
- Fairly true
- Very true.

How true is this statement for you? I sometimes have strong cravings where it feels like I'm in the grip of a force that I cannot control.

- I do not smoke now
- Not at all true
- Not very true
- Fairly true
- Very true.

Level of dependence and treatment for smokers is shown in Table 2. Table 3 shows Fagerström scale for smokeless tobacco users. Table 4 shows level of dependence and treatment for smokeless tobacco users.

## THE CIGARETTE DEPENDENCE SCALE

The CDS was developed to assess principal aspects of smoking dependence. In a French longitudinal survey, CDS showed stronger relationships to urge and change in smoking rate than the Fagerström test for nicotine dependence (FTND).

The original version has 12 items (CDS-12) that map onto DSM-IV and ICD-10 dependence criteria, except for tolerance, i.e., compulsion to smoke, withdrawal symptoms, loss of control, allocation of time to smoking, neglect of other activities to smoke, and persistence of use despite harm and excluding tolerance. A version containing a subset of 5 items (CDS-5) was also developed that covers fewer of these criteria.

In a study conducted by Rohsenow *et al.*, it was concluded that CDS-5 is as good an indicator of pretreatment tobacco involvement as is the FTND in these smokers in treatment.<sup>[7]</sup>

## CIGARETTE DEPENDENCE SCALE, SHORT VERSION (CDS-5, FIVE ITEMS)

The CDS-5 scale is a 5-item scale that measures cigarette dependence based on varied conceptualizations and definitions of dependence with the exception of tolerance. It is a short version of the CDS-12 scale with similar properties but its content is less comprehensive. It is used for adolescents and adults, ages 12–74. The CDS-5 is a quickly administered

**Table 5: The hooked on nicotine checklist**

	Yes	No
1) Have you ever tried to quit but could not?		
2) Do you smoke now because it is really hard to quit?		
3) Have you ever felt like you were addicted to tobacco?		
4) Do you ever have strong cravings for smoke?		
5) Have you ever felt like you really needed a cigarette?		
6) Is it hard to keep from smoking in places where you are not supposed to, like school?		
When you tried to stop smoking. (or, when you have not used tobacco for a while.)		
7) Did you find it hard to concentrate because you could not smoke?		
8) Did you feel more irritable because you could not smoke?		
9) Did you feel a strong need or urge to smoke?		
10) Did you feel nervous, restless or anxious because you could not smoke?		

instrument that provides a brief continuous index of nicotine-use/dependence. The items comprise a mix of self-perceived addiction, efficacy for quitting, smoking quantity, craving, and latency to smoking upon waking. This instrument can be useful in identifying eligible patients and in monitoring progress in cessation treatment. Provides a useful brief index of nicotine use severity. Authors encourage direct comparison to other dependence measures in adolescence for further validation information.

### HOOKED ON NICOTINE CHECKLIST

Hooked on nicotine checklist (HONC) was developed by Joseph DiFranza, M. D. The HONC is a 10-item instrument used to determine the onset and strength of tobacco dependence [Table 5]. The HONC is designed to identify the point at which an adolescent has lost full autonomy over their use of tobacco. This is defined by the authors as occurring when the sequelae of tobacco use, either physical or psychological, present a barrier to quitting. A positive response to any HONC item signals a loss of autonomy and the onset of dependence. The number of positive responses is proposed to reflect the degree of dependence. Although the HONC has only been used with adolescents so far, the authors will be testing its utility for adult smokers in near future.

It is used for adolescents aged 12–15 years. Minimal time required for using this index. A total score is calculated by summing the number of positive responses. The number of positive responses reflects the degree of dependence. The HONC identifies youth for whom help and encouragement with cessation would be appropriate. In treatment, the HONC can also be used to signal the loss of autonomy, the onset of dependence, and the degree of dependence. The HONC has been used in research to identify nicotine-dependent adolescent smokers and provide information on the onset and their degree of dependence.<sup>[8]</sup>

### STANFORD DEPENDENCE INVENTORY

Stanford dependence inventory (SDI) was developed by Joel D. Killen. The SDI is a 5-item modified version of the FTQ for use with adolescent smokers. The purpose of the original FTQ (FTQ; Fagerstrom, 1978; Fagerstrom and Schneider, 1989) is to help researchers and clinicians to classify smokers according to their degree of nicotine dependence. Modifications include rescaling items to provide more response options and analyzing daily cigarette consumption separately. SDI is used for adolescent smokers. Possible scores for the SDI range from 5 to 25 The SDI provides a continuous measure of nicotine dependence for an adolescent population. The SDI may be helpful in designing cessation programs targeted to nicotine-dependent teens. The SDI is a brief self-report measure that can be used to measure nicotine dependence among teen smokers. The SDI yields a single continuous index of dependence. There are no cutoffs available to categorize different levels of dependence.<sup>[9]</sup>

### STANDARD DEPENDENCE INVENTORY

(Scoring information in parentheses; delete this information before using the form).

- When you are in a place where smoking is forbidden, is it difficult for you not to smoke?
  - Very difficult (5)
  - Difficult (4)
  - Somewhat difficult (3)
  - Slightly difficult (2)
  - Not at all difficult (1).
- Do you smoke more in the morning than during the rest of the day?
  - Always (5)
  - Usually (4)
  - Sometimes (3)
  - Rarely (2)
  - Never (1).
- Do you smoke even when you are really sick? (For example, coughing or vomiting a lot?)
  - Always (5)
  - Usually (4)
  - Sometimes (3)
  - Rarely (2)
  - Never (1).
- How deeply do you inhale the smoke?
  - Just into the mouth (1)
  - As far back as the throat (2)
  - Partly into the chest (3)
  - Deeply into the chest (4).
- How soon after waking up in the morning do you smoke your first cigarette?

- a. When you first open your eyes (6)
- b. Within the first 15 min after waking up (5)
- c. Between 15 and 30 min (4)
- d. Between 30 and 60 min (3)
- e. Between 1 and 2 h (2)
- f. More than 2 h (1).

## CONCLUSION

Although there are many scales available to assess tobacco dependence, it is important to select suitable and effective scales for the tobacco users to whom the counseling is provided.

These scales are used regionally; therefore, taking advantage of the characteristics of these scaling methods and comparing them among various populations may be important for elucidating the genetic and nongenetic nature of nicotine dependence.

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## Conflicts of interest

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