

## Attitudes and Reported Practice for Obesity Management in Korea After Introduction of Anti-obesity Agents

This study aimed to evaluate current clinical assessments and management of obesity in the primary care setting in Korea since anti-obesity agents have become available. A questionnaire was sent to eligible primary care physicians selected from a national probability sample in two specialties: family physicians and internists. Of 939 randomly selected physicians, 452 (48.1%) replied. We found that 51.8% of physicians were aware of the definition of obesity, and 33.8% were aware of the definition of abdominal obesity proposed by Asia-Pacific guideline. When evaluating apparently obese patients, 50.0% of respondents measured body mass index (BMI) and 20.4% measured waist circumference. Fewer than 50% of physicians measured blood glucose or lipid profiles, both of which are risk factors for obesity. About 47.3% of physicians prescribed an anti-obesity medication without allowing sufficient time for nonpharmacologic therapy to take effect, and 68.8% of physicians prescribed anti-obesity medications to patients that requested them regardless of obesity status. The majority of respondents did not appropriately evaluate obesity and its risk factors, and were readily susceptible to prescribing anti-obesity medications. Our findings suggest that primary care physicians in Korea need additional education on obesity and its management.

**Key Words :** Obesity; Anti-Obesity Agents; Patient Care Management; Attitude of Health Personnel; Physician's Practice Patterns

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### INTRODUCTION

Overweight and obesity represent a rapidly growing health threat in both developing and developed countries (1). Primary care physicians play a central role in the systematic assessment and management of obesity (2-7). Guidelines for the management of obesity have been developed in several countries, including Korea (8-10).

Like other Asian countries, Korea has experienced rapid socioeconomic growth with prominent lifestyle transformation over the past several decades. The Korean National Nutrition Survey found that the prevalence of obesity (BMI  $\geq$  25 kg/m<sup>2</sup>) increased from 20.5% in 1995 (11) to 26.3% in 1998 (12). Concern about weight and weight loss is particularly prominent in women, even those of normal weight. Physicians in Korea have become increasingly involved in the treatment of obesity since anti-obesity drugs became available.

Studies in Western countries have shown that general practitioners do not have sufficient relevant knowledge and skills to effectively manage overweight and obesity (5, 13-15). A previous study conducted in urban area in Korea before introduction of anti-obesity agents reported that primary care physicians had little concern about obesity management (16). Although weight problems are increasing in developing coun-

tries, there is little information on the attitudes and practices of physicians in regard to obesity management in Asian countries. We therefore investigated the attitudes and practices of primary care physicians in Korea in regard to the assessment and management of obesity after anti-obesity agents became available.

### MATERIALS AND METHODS

#### Study subjects

At year 2000, there were about 10,070 physicians of primary care clinics registered with the Health Insurance Review Agency of Korea. Our national probability sample frame was composed of 2,282 family physicians and 2,415 internists among 10,070 physicians listed in this database. The list of family physicians and internists was sorted by registered number of the clinic. To obtain a systematic sample, the number of 57 was chosen in a table of random numbers as starting number, after that, every 5th number was selected on the list of the sample. Finally, the list of 392 family physicians and 547 internists were obtained as the roll of study subjects. This study was conducted from April through August in

2002.

### Survey procedure

Physicians identified as eligible were sent a letter from the coordinator explaining the purpose of the survey, and questionnaires were sent to physicians who consented to take part. Each subject received a cover letter, a copy of the questionnaire, and a return envelope with postage paid. About four weeks after the initial mailing, nonrespondents received a reminder letter, together with a second copy of the questionnaire and a return envelope. At least three follow-up telephone calls were made before categorizing a physician as a nonrespondent.

### Questionnaires

The questionnaires addressed recent developments in obesity management and were pilot-tested on 12 residents in family medicine for scope, length, and clarity. The questionnaires, which were designed to be completed in less than 10 min, consisted primarily of closed-ended questions and mutually exclusive sets of questions.

**Demographic Profile:** Questions were included regarding age, sex, geographic region of practice, type of practice, years as a primary care physician, and numbers of patients and obese patients seen per day.

**Knowledge regarding definition of obesity and abdominal obesity:** The "knowledge" questions consisted of 3 statements

designed to examine physicians' perception of the definitions of obesity (BMI  $\geq 25$  kg/m<sup>2</sup>) and abdominal obesity (>90 cm in males, >80 cm in females) proposed by the Asia-Pacific (9) and Korean (10) obesity guidelines.

**Practice of screening for obesity and abdominal obesity:** These questions consisted of 2 statements designed to examine physicians' practice of screening for obesity and abdominal obesity in new patients (8).

**Practice of assessing anthropometric measurements and risk factors in apparently obese patients:** These questions consisted of 10 statements designed to examine physicians' assessment of anthropometric measurements and risk factors in apparently obese patients. The former included weight, body mass index (BMI), and waist circumference. The latter included family history, smoking status, and measurements of blood pressure, fasting glucose, total cholesterol, triglycerides, and HDL-cholesterol (8).

**Attitudes and practices for managing obesity:** The "attitude and practice" questions consisted of statements designed to examine physicians' attitudes and practices toward the management of obesity. They included nonpharmacologic management, attitude towards the effectiveness and safety of anti-obesity medications, and practice or behavior in prescribing anti-obesity agents.

### Data analysis

The questionnaires were hand-checked for completeness and coded before data entry. The data were examined by simple frequency counts because the primary aim of this study was to describe attitudes and practices of primary care practitioners. The  $\chi^2$ -test for trends was used to identify significance of trends according to subgroups based on the age of the physicians and the geographic area in which they practiced. All analyses were two-tailed, and a *p*-value <0.05 was considered statistically significant. Statistical analysis was performed using SAS 8.0 software for Windows (SAS institute Inc. Cary, NC, U.S.A.).

## RESULTS

### Profile of participants

Of the 939 questionnaires distributed, 452 (48.1%) were returned complete. There were no notable differences of the profiles of sex, age, region of practice, and specialty between the physicians who participated in this study and those who did not. Table 1 presents a profile of the participating physicians. Approximately half were 40–49 yr of age and practiced in an urban area. Two hundred and nine (46.2%) were family physicians and 243 (53.8%) were internists. Almost all were in solo practice, and over three-quarters saw more than 50 patients per day.

Table 1. Demographic characteristics of study participants

Variables	Category	Participants (n=452) No. (%)	Non- participants (n=487) No. (%)
Sex	Male	403 (89.2)	425 (87.3)
	Female	49 (10.8)	62 (12.7)
Age (yr)	<40	117 (25.9)	133 (27.3)
	40-49	251 (55.5)	276 (56.7)
	$\geq 50$	84 (18.6)	78 (16.0)
Region of practice	Urban	223 (49.3)	217 (44.6)
	Middle	173 (38.3)	181 (37.2)
	Rural	56 (12.4)	89 (18.2)
Specialty	Family medicine	209 (46.2)	212 (43.5)
	Internal medicine	243 (53.8)	275 (56.5)
Practice type	Solo practice	435 (96.2)	
	Group practice	17 (3.8)	
Years as a primary care physician	<5	189 (41.8)	
	6-10	138 (30.5)	
	$\geq 11$	125 (27.7)	
Average daily number of patients	<50	105 (23.2)	
	51-80	185 (40.9)	
	$\geq 80$	162 (35.8)	
Average daily number of obese patients	<1	98 (21.7)	
	2-5	198 (43.8)	
	$\geq 6$	156 (34.5)	

Urban, large cities; Middle, middle and small cities; Rural, district area.

### Knowledge regarding obesity and obesity screening practice

Participants' knowledge regarding obesity and obesity screening practice is presented in Table 2. About half of the respondents (51.8%) were aware of the correct definition of obesity, BMI  $\geq 25$  kg/m<sup>2</sup> according to Asia-Pacific guidelines, (7) and about one-third each correctly identified abdominal obesity as waist  $>90$  cm for males and  $>80$  cm for females. Older physicians and those who practiced in rural areas had lower rates of correct responses to items related to the definition of abdominal obesity compared to younger physicians and those who worked in urban areas.

Regarding screening for obesity, about 15% of physicians reported measuring the weight and height of new patients, but only 1.8% of physicians in rural areas took these measurements. Fewer than 5% of the respondents measured waist circumference to screen for abdominal obesity in new patients, and physicians in rural areas seldom screened for abdominal obesity.

### Assessments of anthropometric measurements and risk factors in apparently obese patients

The frequency of assessments of anthropometric measure-

ments and of risk factors in apparently obese patients is summarized in Table 3. About half of the participants did not measure weight and BMI, and about 80% did not measure waist circumference in obese patients. About 40% of physicians evaluated family history of premature coronary heart disease, and about 60% evaluated smoking status. About 80% of the participants measured blood pressure in obese patients, but only about 40% measured fasting plasma glucose levels. Approximately half of these physicians each measured total cholesterol and triglyceride, and about one-third measured HDL-cholesterol in obese patients. Older physicians and those practicing in rural areas had lower rates of assessment of these anthropometric measurements and risk factors.

### Attitudes and reported practice for management of obesity

The views of primary care physicians on nonpharmacologic treatments and anti-obesity agents are presented in Table 4. About 60% of these physicians reported recommending dietary modification and exercise therapy. Approximately one-third of the physicians regarded anti-obesity medications as effective, whereas 8% thought these agents caused too many side effects and 60% regarded these agents as too expensive. Younger physicians and those practicing in urban areas had

**Table 2.** Primary care physicians' knowledge and attitude regarding obesity defined by Asia-Pacific guideline and practice of screening for obesity (as percentage of participants who responded 'yes')

	Total	Age (yr)			Region		
		<40	40-49	$\geq 50$	Urban	Middle	Rural
Correctly defined obesity	51.8	59.8	48.6	50.0	53.8	48.0	55.4
Correctly defined abdominal obesity of males	32.5	29.9	32.7	35.7	37.2	28.3	26.8*
Correctly defined abdominal obesity of females	35.2	42.7	32.7	32.1*	38.1	33.5	28.6*
Screened weight and height in new patients	15.0	12.0	15.5	17.9	16.6	17.3	1.8*
Screened waist circumference in new patients	4.0	3.4	4.4	3.6	4.5	4.6	0.0

\* $p < 0.05$  by  $\chi^2$ -test for trend according to subgroups. Urban, large cities; Middle, middle and small cities; Rural, district area.

**Table 3.** Primary care physicians' practice for assessment of anthropometric measurements and risk factors in apparently obese patients (as percentage of participants who responded 'yes')

	Total	Age (yr)			Region		
		<40	40-49	$\geq 50$	Urban	Middle	Rural
Anthropometric measurements							
Weight	68.1	71.8	68.5	61.9*	71.7	73.4	37.5*
Body mass index	50.0	57.3	50.6	38.1*	52.9	55.5	21.4*
Waist circumference	20.4	21.4	20.7	17.9	22.0	23.1	5.4*
Risk factors							
Family history <sup>†</sup>	42.7	41.0	44.6	39.3	43.5	49.7	17.9*
Smoking	61.3	68.4	60.2	54.8*	62.8	65.3	42.9*
Blood pressure	82.1	82.9	82.9	78.6	83.4	84.4	69.4*
Fasting glucose	44.0	47.0	45.4	35.7*	43.5	45.7	41.1
Total cholesterol	52.2	49.6	54.6	48.8	53.4	53.4	44.6*
Triglyceride	47.8	46.2	51.0	40.5	48.0	50.9	37.5*
HDL-cholesterol	32.7	33.3	35.1	25.0*	33.2	33.5	28.6

\* $p < 0.05$  by  $\chi^2$ -test for trend; <sup>†</sup>Family history of premature coronary heart disease. Urban, large cities; Middle, middle and small cities; Rural, district area.

**Table 4.** Primary care physicians' attitudes and practices for management of obesity (as percentage of participants)

	Total	Age (yr)			Region		
		<40	40-49	≥50	Urban	Middle	Rural
Nonpharmacologic management							
Diet modification	62.6	71.8	61.8	52.4*	65.5	65.3	42.9*
Exercise therapy	64.2	71.8	63.7	54.8*	66.4	68.2	42.9*
Attitude towards effectiveness and safety of anti-obesity medications							
Effective for weight reduction	31.4	39.3	29.5	26.2*	31.8	34.1	21.4*
Cause too many side effects	8.2	4.3	5.6	21.4*	6.3	8.7	14.3*
Too expensive	61.5	65.0	63.7	50.0*	61.9	62.4	57.1
Prescribe anti-obesity medications to obese patients							
At initial visit for weight reduction	47.3	50.4	51.8	29.8*	52.5	45.1	33.9*
After 1 month of diet and exercise	15.3	16.2	13.5	19.0	15.7	15.6	12.5
After 3 months of diet and exercise	30.8	27.4	29.5	39.3	26.5	32.4	42.9
Do not prescribe	4.2	3.4	3.2	8.3	3.1	4.6	7.1
Experience requests by non-obese patients to prescribe anti-obesity medications							
Yes	90.7	90.6	94.0	81.0*	92.8	92.5	76.8*
No	9.3	9.4	6.0	19.0	7.2	7.5	23.2
Prescribe anti-obesity medications to nonobese patients							
Prescribe at their request	29.8	34.0	30.5	20.6*	29.0	31.3	30.9
Prescribe after persuasion	39.0	40.6	40.3	32.4	38.2	39.4	41.9
Do not prescribe	30.7	25.5	28.8	45.6	31.9	29.4	30.2
Prescribe combinations of anti-obesity medications							
Yes	26.5	27.4	29.9	15.5*	25.6	31.2	16.1*
No	73.5	72.6	70.1	84.5	74.4	68.8	83.9

\* $p < 0.05$  by  $\chi^2$ -test for trend. Urban, large cities; Middle, middle and small cities; Rural, district area.

more positive views on anti-obesity medications, whereas older physicians and those working in rural areas had more concerns about the side effects of these agents.

About half of the primary care physicians reported prescribing anti-obesity medication to patients at their initial visit, instead of first encouraging these patients to exercise and modify dietary intake. Approximately 90% of the physicians reported experiencing a situation where a nonobese patient asked them to prescribe anti-obesity medications, even though the patient did not meet the criteria for drug therapy. In these cases, about 30% of the physicians reported prescribing the medication immediately upon request and 40% reported prescribing the medication only after failing to persuade the patient against the use of medication. In addition, about one-quarter of these physicians reported prescribing combinations of anti-obesity medications. Physicians who were younger or practiced in urban areas tended to overprescribe anti-obesity medications.

## DISCUSSION

Our results indicated that attitude and practices in managing obesity among primary care physicians in Korea might be far from the guideline (8-10). Although the prevalence of a BMI  $\geq 30$  kg/m<sup>2</sup> is much lower in Korea (2.3%) (12) than in Western countries (22.3%) (8), the present results indicate that primary care physicians in Korea tend to overprescribe

anti-obesity medications without appropriate evaluation or without allowing enough time for diet and exercise treatment to take effect in obese patients.

Before anti-obesity medications came to market, primary care physicians in Korea were less concerned about the management of obese patients, even those who were severely obese or who had obesity-related health problems (16). This lack of interest in obesity management prior to the advent of anti-obesity medications may have been due to the fact that in Korea there is no insurance reimbursement for nonpharmacologic treatments such as diet and exercise therapy, making such treatments less of a concern for physicians.

Following the availability of anti-obesity medications in Korea in 2001, interest in obesity management increased both among patients and physicians. Marketing of these agents led patients to believe that they could control their weight with a "magic bullet". Moreover, physicians readily prescribed these medications to their patients because there is insurance reimbursement for the prescription fee, although not for the medications themselves.

We found that many primary care physicians in Korea were unfamiliar with the definitions of obesity and abdominal obesity, with only half being aware of the definition of obesity according to the Asia-Pacific regional obesity guidelines. In addition, the physicians surveyed tended to conduct inadequate evaluation of obese patients. Although biennial measurements of BMI and waist circumference are recommended for the evaluation of obesity and abdominal obesity in asymp-

tomatic patients (8), only 15% of physicians measured a patient's weight and height at the initial visit, and only 5% measured waist circumference.

Even in apparently obese and overweight patients, many physicians did not adequately assess anthropometric measurements, with only about 50% of physicians measuring BMI and 20% measuring waist circumference in obese patients. Since obese patients have higher rates of prevalence and mortality from cardiovascular disorders (17-19), evaluation of risk factors and the patient's medical history is needed. Our findings indicate that physicians in Korea are not carrying out sufficient evaluation of cardiovascular risk factors in obese patients.

Although about two-thirds of the physicians reported recommending diet and exercise therapy, this was lower than the 92% of family physicians in Germany who attached great importance to nutritional counseling (20). In managing obesity, diet and exercise therapy is usually tried for 3 to 6 months before initiating medication (1, 8-10). It has been shown that, in the management of chronic diseases, lifestyle modification is more effective than pharmacotherapy (21, 22). Although only about 30% of our subjects regarded pharmacotherapy as effective and over 60% agreed that these anti-obesity agents were too expensive, approximately 50% of the physicians indicated that they would prescribe an anti-obesity medication at a patient's initial visit if the patient was willing to lose weight. Most of the surveyed physicians reported seeing over 50 patients per day, indicating that there are severe constraints on their time. These time constraints may explain why primary physicians in Korea tend to take the easier and less time- and labor-intensive route of prescribing a drug rather than recommending some type of behavioral therapy. Our results on physicians in Korea differ from those obtained in a study of primary care physicians in Israel, which found that only 4% of doctors recommended using regular anti-obesity drug therapy (23).

Approximately 90% of the physicians surveyed in the present study reported being asked to prescribe anti-obesity medication by nonobese patients, and 70% of these physicians actually prescribed the medication. These findings indicate that there may be a serious risk of abuse of these drugs. In addition, about one quarter of the physicians did not hesitate to prescribe a combination of anti-obesity medications, even though there is no evidence showing that combinations are more effective than individual agents. The management of obesity by Korean physicians thus differed considerably from basic obesity management guidelines (1, 8-10). Obesity experts in the U.S., where the prevalence of obesity is high, regard medications as less important than exercise in treating obesity (24).

Physicians who were older or who practiced in rural areas had less interest in obesity management. In contrast, younger physicians or those who worked in urban areas tended to over-prescribe anti-obesity agents. Although family physicians have been reported to be more aggressive in the treatment of obe-

sity than other physicians in the United States (14), we observed no significant differences in attitudes or reported practice according to specialty.

Our study had several limitations. The response rate of physicians was low, although we regard those who participated as adequate representative subjects selected by systematic random sampling among family physicians and internists in Korea. In addition, use of a self-reporting questionnaire may have led to an overestimation of the rate of physicians' evaluation of obesity and/or an underestimation of the rate of physicians' prescription of anti-obesity medications.

In conclusion, we have found that primary care physicians in Korea do not sufficiently evaluate obesity in their patients, yet they over-prescribe anti-obesity medications. Anti-obesity medications are not covered by insurance in Korea, and thus cost a patient about 83 to 125 US dollars per month. Over-prescription of anti-obesity medications adds much to the national cost of medical care (25). Our findings suggest that primary care physicians in Korea need more education about obesity and its management, with an emphasis on prudent prescription of anti-obesity agents. This should enhance the contribution of primary care physicians to the appropriate management of obesity.

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