



Nutrition Literacy in Adolescence: What Young People Understand About Food Labels and What They Do With It

Sofia Kalantzi^{1*}, Rasmus Bjerre² and Marek Zahradnik³

¹Centre for Public Health Nutrition, Macedonian Institute of Human Nutrition, Kavala, Greece

²Department of Health Behaviour Research, Bornholm Institute of Human Nutrition, Ronne, Denmark

³Department of Adolescent Medicine, Zlin Centre for Nutritional Medicine, Zlin, Czech Republic

*Correspondence to: Sofia Kalantzi, Centre for Public Health Nutrition, Macedonian Institute of Human Nutrition, Kavala, Greece

E-mail: s.kalantzi@mihn.gr

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Abstract

Reading a food label, understanding it and acting on it are three different things, and the literature measures them as though they were one. In a survey of 1,983 Malaysian adolescents aged 13 to 16, 89.7 per cent reported reading food labels while literacy scored only moderate across comprehension, skills and attitudes alike. A United States survey found 92.4 per cent aware of the food guide pyramid but 29.3 per cent aware of the dietary guidelines, and fewer than 25 per cent using nutrition facts labels to decide what to buy. Objective testing widens the gap further: among more than 500 students, nearly 90 per cent could not define serving size and a third could not compare two labels. In a school survey, 64 per cent selected the better of two snack labels, but 63 per cent cited the attractiveness of the label among their reasons for choosing.

Keywords: Nutrition literacy; Food labels; Adolescents; Health literacy; Food choice

Introduction

Food consumption has shifted globally from home-cooked meals towards ultra-processed packaged products, and adolescents are heavily exposed to that shift while acquiring independent purchasing power [1,2,3]. In one school survey, 61 per cent spent pocket money on packaged snacks at least weekly and 88 per cent selected those snacks themselves [4].

Nutrition and food label literacy is defined as the ability to read, interpret and understand the information presented on food labels so as to make informed choices [1,5]. School-based programmes to improve it are widely recommended on the assumption that comprehension translates into behaviour [1,6].

That assumption is what this review examines. Reading a label, understanding it correctly and using it to decide a purchase are separable, and the published figures for each differ considerably.

Objective

This review sets out to establish four things from the published literature. First, how many adolescents report reading food labels. Second, how well they understand them when tested rather than asked. Third, how often labels influence what is actually bought. And fourth, what educational interventions have achieved against each of those three, since a programme may move one without moving the others.

Literature Review

How many report reading labels: A cross-sectional survey of 1,983 secondary school adolescents aged 13 to 16 across five regions found that 89.7 per cent read food labels, while food label literacy was at a moderate level across all three measured domains: comprehension and interpretation, skills in using labels, and attitudes towards labels (Figures 1 and 6) [7]. Scores differed significantly between regions in all three domains, and older adolescents scored higher [7].

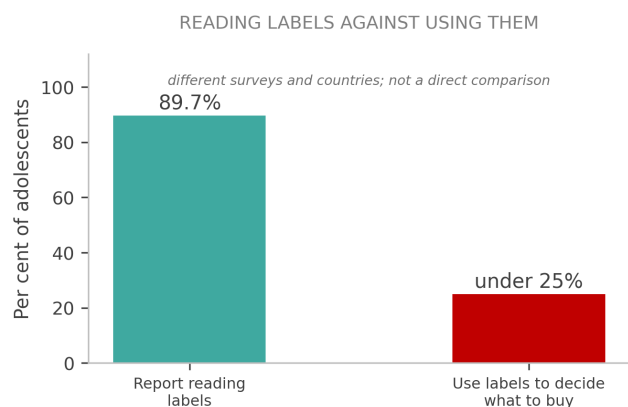


Figure 1: Reading labels against using them, in separate surveys [5,7]

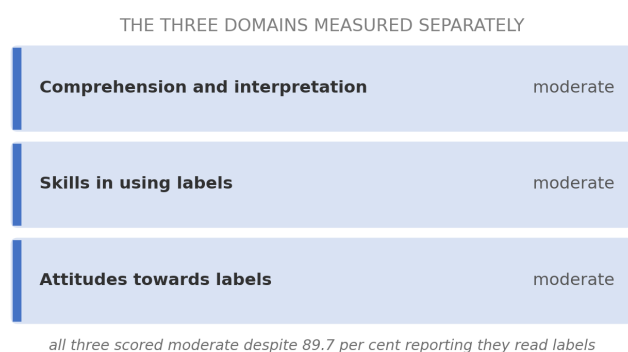


Figure 6: The three domains measured separately in 1,983 adolescents [7]

What they do with them: A survey reported that although 92.4 per cent of adolescents were aware of the food guide pyramid, only 29.3 per cent were aware of the dietary guidelines, and fewer than 25 per cent used nutrition facts labels to decide which foods to purchase, which the reviewing authors described as a gap between awareness and practical application (Figure 5) [1,5]. Work in Turkish adolescents found nutrition literacy moderate but practical use of labels limited, with better literacy associated with more frequent label use [1,8].

What objective testing shows: Among more than 500 undergraduate and graduate students, nearly 90 per cent could not define serving size and one third could not perform simple tasks involving comparison of nutrition labels (Figure 2) [9]. In a separate survey of approximately 200 students, only 60 per cent could use label information to determine how many servings of a food would meet the full daily value of carbohydrate for a 2,000 calorie diet [9,10].

Table 1: Label reading, use and comprehension by method of measurement

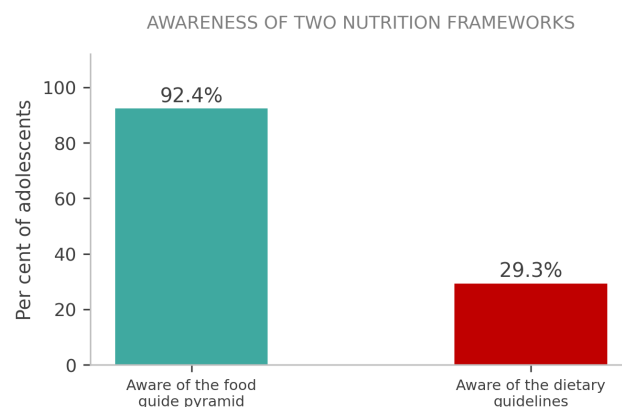


Figure 5: Awareness of two nutrition frameworks among adolescents [1,5]

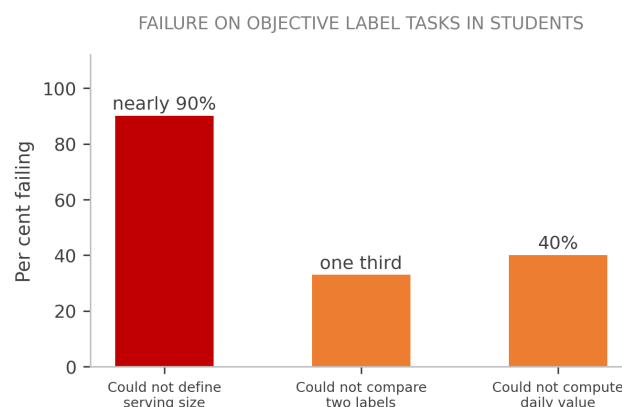


Figure 2: Failure on objective label tasks among students [9,10]

Measure	Method	Reported figure
Read food labels	Self-report	89.7% [7]
Frequent label readers	Self-report	74.5% [4]
Use labels to decide purchases	Self-report	Under 25% [1,5]
Can define serving size	Objective task	About 10% [9]
Can compare two labels	Objective task	About two thirds [9]

A school survey measuring both: A study of adolescents attending schools in a large Indian city found 74.5 per cent were frequent label readers, with female predominance, and that over 74 per cent paid frequent attention to the brand name at 75 per cent, price at 85 per cent and the nutrition panel at 81 per cent (Figure 3). Eighty-four per cent obtained good knowledge scores on interpreting labels [4].

The finding within that finding: In the same study, over 64 per cent were able to select the better food label when given a choice between two snacks, although some did so for reasons such as the label being attractive, which was cited by 63 per cent (Figure 4) [4]. Selecting the healthier product and selecting it for nutritional reasons are therefore not the same event, and a test scored on the outcome alone cannot separate them.

Table 2: Five distinct constructs frequently reported as one

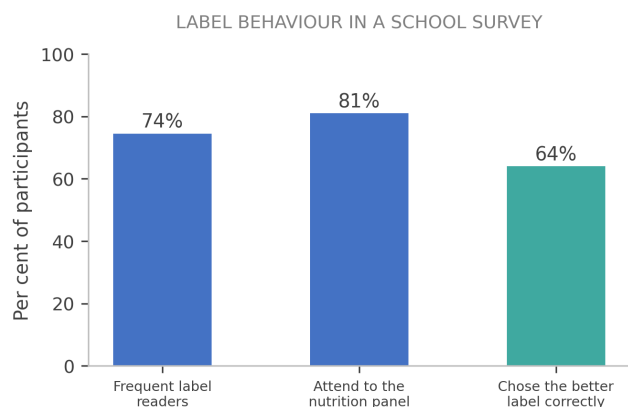


Figure 3: Label behaviour in a school survey [4]

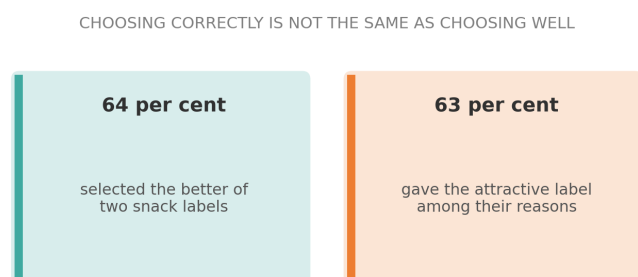


Figure 4: Choosing correctly is not the same as choosing well [4]

Reading and comprehension are not interchangeable: Longitudinal work on nutrition label literacy states the distinction explicitly, noting that adolescents may report reading labels while still having limited ability to evaluate nutrition information accurately, and argues for a label-specific literacy perspective rather than a broad claim that general nutrition knowledge suffices [11]. European label research similarly shows that consumer response depends not only on the availability of information but on comprehension and context [11,12].

Domain	What it measures
Reading	Whether the label is looked at [7]
Comprehension	Whether the information is understood [9,11]
Skills	Whether it can be applied to a comparison [7,9]
Use	Whether it changes the purchase [1,5]
Reason for use	Whether the basis was nutritional [4]

Where literacy is lowest: A school-based survey across large Indian cities found only about one third of adolescents reported reading nutrition labels when selecting packaged foods, and a subsequent study reported that fewer than 15 per cent of adolescent girls demonstrated adequate knowledge of balanced diets [13]. The authors describe this as a gap in basic nutrition knowledge, skills and application, and argue for validated assessment tools and early school intervention [13].

What interventions achieve: A scoping review of educational interventions on food label comprehension and food choice among adolescents found that programmes improved label knowledge and dietary behaviours, while noting that label information is often complex and consumer literacy limited, and that branding presents a barrier to interventions attempting to bridge the gap between the information on labels and adolescents' ability to comprehend it [1]. A multifaceted food literacy intervention improved nutritional knowledge and self-regulation, and school-based culinary and nutrition education programmes have increased food skills, knowledge and cooking confidence [6,14].

Table 3: Educational approaches and their reported effect

Intervention type	Reported effect
School label-reading programmes	Improved knowledge and behaviour [1]
Multifaceted food literacy	Knowledge and self-regulation improved [6]
Culinary and cooking programmes	Food skills and confidence increased [6,14]
Interactive label activities	Recommended by prevalence study authors [7]

The terms are not used consistently: Systematic review of definitions found nutrition literacy and food literacy distinguished in some sources and used interchangeably in others [25,26], and separate work has set out the components of food literacy [27] and mapped the term across a scoping review [28]. The nuances between health, nutrition and food literacy have been argued directly [25]. This matters for comparison, because studies reporting literacy in adolescents are not always measuring the same construct [26,28].

Label use in adults and its relation to intake: Systematic reviews of consumer understanding and use of nutrition labelling report the same pattern in adults [16,17], and label use has been related to dietary intake in national survey data [18]. Reviews of nutrition knowledge and label use conclude the relationship is real but limited [10], and health literacy, self-efficacy and label use have been examined together in young adults [15].

Label format changes what is understood: The science on front-of-package labels has been reviewed [19], and randomised comparison of two formats found differences in consumer response [20]. An international experimental study across twelve countries assessed objective understanding of competing front-of-package schemes [21], and understanding has been examined specifically among nutritionally at-risk individuals [22]. Systematic review and meta-analysis of objectively measured purchasing found effects of such schemes on what is bought [34], and policy analyses have examined their specification and development [32,33]. If format alters comprehension, part of the adolescent gap is a design variable rather than an educational one [1,21].

The wider determinants of adolescent eating: Individual and environmental influences on adolescent eating behaviour have been described comprehensively [30], and systematic review has examined the relationship between food literacy and dietary intake in this age group specifically [14]. School-based interventions addressing overweight and disordered eating in adolescents operate alongside literacy programmes [31]. Theoretical accounts of health promotion by social cognitive means and of health literacy as a public health goal supply the framework within which these programmes are designed [23,24], and parallel work in diabetes education shows the same distinction between knowledge and action [29].

Method

Search strategy: PubMed and the archives of the major public health nutrition, health education and adolescent health journals were searched for studies of nutrition and food label literacy in adolescents. Search terms combined nutrition literacy and food label literacy with adolescents, comprehension, food choice, school and intervention. Reference lists of the scoping review of interventions [1] and the prevalence study [7] were screened by hand for primary sources.

Eligibility: Studies were included if they measured label reading, comprehension or use in adolescent or young adult populations, or evaluated an educational intervention intended to change any of these. Studies in undergraduate students are included where they contribute objective task performance and are identified as such.

Data extraction and handling: Population, age range, the construct measured and the method of measurement were extracted as published. Whether a figure derives from self-report or from an objective task is stated in every case, because self-reported reading and tested comprehension differ substantially within the same literature and the distinction is central to the argument here. This review reports published findings and does not constitute nutritional or dietary guidance for any individual or educational setting. No pooling or re-analysis was performed. Figures 1 to 6 and Tables 1 to 3 reproduce published values only. This is a narrative synthesis of published literature and was not registered as a systematic review.

Concluding Remarks

Almost nine in ten adolescents in one large survey said they read food labels, and in the same survey literacy scored only moderate across comprehension, skills and attitudes [7]. Those two results sit in one paper and describe the same young people. Reading is nearly universal and understanding is partial, which means a programme measuring its success by whether labels are looked at is measuring the step that was least in doubt.

The comparison between self-report and objective testing is where the gap becomes hard to explain away. Adolescents and students report high rates of label reading, and yet nearly 90 per cent of more than 500 students could not define serving size and a third could not compare two labels [9]. Serving size is the term on which every other number on the panel depends, so failing to define it is not a peripheral gap; it makes the rest of the label uninterpretable.

The most instructive single finding is the pairing in the school survey: 64 per cent selected the better of two snack labels, and 63 per cent gave the attractiveness of the label among their reasons [4]. A test scored only on which product was chosen would have recorded a reasonable success rate. The reasons show that a substantial share of correct answers were not reached by reading the nutrition panel, and a design that omits the second question cannot detect this.

The distinction between awareness and use appears again in the framework data. Ninety-two per cent of adolescents were aware of the food guide pyramid, 29.3 per cent of the dietary guidelines, and under a quarter used labels to decide a purchase [1,5]. Recognition of a public health graphic is not evidence that its content informs behaviour, and awareness surveys are considerably easier to run than behavioural ones.

None of this argues against teaching label literacy. Interventions do improve knowledge and reported behaviour, and multifaceted programmes including cooking and self-regulation components show broader effects [1,6,14]. The argument is about what gets measured: programmes evaluated on whether adolescents read labels will report success in a population where 89.7 per cent already do, while the constructs that would show a change in choice go unrecorded [7,11].

Two structural obstacles deserve naming because they lie outside the classroom. Label information is described in this literature as complex and consumer literacy as limited, so part of the comprehension gap belongs to label design rather than to the reader [1]. And branding is identified as a barrier to interventions that aim to bridge the gap between label content and comprehension, which is consistent with the 63 per cent citing attractiveness [1,4]. A programme teaching adolescents to read panels is competing against a package designed to be persuasive.

Three limitations belong with these conclusions. The prevalence figures come from surveys in different countries with different labelling regimes, so the 89.7 per cent and the one third reported elsewhere are not directly comparable [7,13]. The objective task data derive from undergraduate and graduate students rather than school-age adolescents, so they are indicative rather than directly transferable [9,10]. And associations between label use and dietary choices are described in this literature as modest and context dependent, so improving comprehension should not be expected to produce large shifts in intake on its own [11].

There is a measurement recommendation implicit in all of this and it costs nothing. The school survey that asked which snack was better also asked why, and that second question is what revealed that 63 per cent were influenced by the attractiveness of the packaging [4]. Any evaluation of a label literacy programme can add it, and without it a programme cannot distinguish teaching comprehension from teaching test performance [4,11].

The same applies to the choice between self-report and task. Asking adolescents whether they read labels produces figures between 74.5 and 89.7 per cent; asking them to define serving size or compare two panels produces failure rates near 90 and 33 per cent [4,7,9]. Both are cheap to administer. Programmes that report only the first are choosing the measure that will show the better result [7,9].

Finally, the age gradient in the prevalence data is worth taking seriously for programme timing. Literacy scores were higher in older adolescents, and significantly associated with age as well as with body mass index-for-age [7]. That is consistent with literacy accruing through adolescence rather than arriving with a single lesson, and with the argument for early and repeated school intervention rather than a one-off module [7,13,31].

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The authors thank the investigators who asked adolescents why they chose a product as well as which one they chose, since that second question is what distinguishes label literacy from a correct guess.

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Conflict of Interest

The authors declare no competing interests.

Ethics Statement

This article reviews previously published studies only. No new patient data were collected and no participants were recruited, so ethical approval was not required.

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