



## Health Literacy

## The relationship between caregiver functional oral health literacy and child oral health status



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## ARTICLE INFO

## Article history:

Received 29 April 2013

Received in revised form 30 September 2013

Accepted 26 October 2013

## Keywords:

Caregiver

Oral health literacy

Oral health status

Child

## ABSTRACT

**Objective:** To describe the relationship between caregivers' oral health literacy (OHL) and the oral health status of their children in an Asian population.

**Methods:** A random sample of 301 child/caregiver dyads was recruited from kindergartens in Hong Kong. Two locally-developed and validated OHL assessment tasks were administered to caregivers with Hong Kong Rapid Estimate of Adult Literacy in Dentistry-30 (HKREALD-30) assessing word recognition and Hong Kong Oral Health Literacy Assessment Task for Paediatric Dentistry (HKOHLAT-P) assessing comprehension. Their children's oral health status was assessed [dental caries experience – decayed, missing, filled teeth index – (dmft) and oral hygiene status – Visible Plaque Index (VPI)].

**Results:** Caregivers' literacy was associated with children's oral health status. The HKOHLAT-P had a stronger association with children's oral health than HKREALD-30. HKOHLAT-P and HKREALD-30 remained associated with dmft in the adjusted negative binomial regression models (accounting for socio-demographics), Incidence Rate Ratio (IRR) 0.97,  $p = 0.02$ , and 0.96,  $p = 0.03$ , respectively. In the adjusted model, HKOHLAT-P was associated with VPI (IRR 0.90,  $p < 0.05$ ), but no association between HKREALD-30 and VPI was evident.

**Conclusion:** The main conclusion of this study was that caregiver oral health literacy was associated with their child's oral health status. A comprehension instrument had a more robust association with children's oral status than a word recognition instrument.

**Practice implications:** This study has implications for general public health education for designing community-level interventions.

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## 1. Introduction

Debates regarding the conceptualization and definition of health literacy (HL) [1–3] and, more recently, oral health literacy (OHL) [4,5] indicate that the fields continue to be of considerable interest. Nutbeam's [6,7] notions of health literacy as an outcome of health promotion and as a 'clinical risk' or 'personal asset' provide a useful conceptual framing. His earlier work [3],

making the important 3-way distinction between: (i) basic functional literacy; (ii) communicative/interactive literacy; and (iii) critical health literacy articulated some of the aspects of health literacy that are distinguishing the field from mainstream literacy research [8]. The initial and, to date, dominant focus on functional levels of (oral) health literacy is reflected in the definitions in Table 1a.

OHL studies adopting a functional focus have yielded fruitful results regarding the readability of health materials [9] and the assessment of patient reading skills, including word recognition [10,11] and comprehension [12]. As a more recent evolution from the HL agenda, particularly in the USA [13–16], OHL is proving to be developing as a distinct field. These distinctions are driven by differences in healthcare contexts which are not only disciplinary in nature (see Table 1a) but also encompass unique, topic-specific communicative events and epidemiological concerns.

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**Table 1a**  
Definitions of HL and OHL.

Health literacy (1998) [3]	Oral health literacy (2000) [5]
“the cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand and use information in ways which promote and maintain good health”	“the degree to which individuals have the capacity to obtain, process, and understand basic oral and craniofacial health information and services needed to make appropriate health decisions”

In the paediatric context, there is substantial evidence in the medical literature indicating significant associations between caregiver's generic health literacy levels across a range of child health status conditions [17]. However, there is limited information on the relationship between caregiver's OHL and children's oral health status [18,19], such as dental caries – one of the most common health problems of childhood [20]. While it is acknowledged that caregivers play a critical role in the prevention and management of children's oral health status [21], there has been little consideration of the effect of caregiver OHL on children's oral health. For the most part, oral health studies have focused on associations between caregivers' OHL and subjective assessments of oral health [22–24].

As a relatively new field arising in western medicine, these studies have been conducted mostly in English dominant countries such as North America [10,11,18,19,22–27], Australia [28,29], Canada [30]. Whilst multilingualism is arising as an area of communication research in oral health [31], studies of OHL in other languages and countries remains in its infancy. There is, however, some pioneer work in SE Asia in establishing validated literacy assessment instruments both using English language India [32] and Asian languages, e.g. Cantonese [33,34]. It is yet to be fully established how OHL can inform our understandings of child oral health status and management in non-English speaking contexts, specifically amongst Chinese linguistic groups. Of these, those who speak the Cantonese dialect and read traditional Chinese script constitute a significant global population in terms of numbers and distribution [35] and, therefore, warrants separate investigation.

This study, therefore, aimed to describe the relationship between the functional OHL levels of primary caregivers in a Cantonese population and the clinical oral health status of their preschool children. In addition, the study sought to determine if a complex comprehension literacy instrument had a more robust association with children's oral health than a simple word recognition test.

## 2. Methods

### 2.1. Sample

This study was approved by the by the Institutional Review Board of the University of Hong Kong/Hospital Authority Hong Kong West Cluster (HKU/HA HKW IRB) (Ref: UW 09-184). A random sample of child/parent dyads were recruited from kindergartens in Hong Kong. The children were 5 years of age (birth dates ranging from December 2004 to December 2005). The sampling frame was comprised of kindergartens on Hong Kong Island with an enrollment of 70 children or more. Using SAS software version 9.3 (SAS institute Inc., Cary, NC, USA) sample power calculation based on Fisher's Z Test for Pearson Correlation, to have a 90% chance with two-sided test at a 5% significant level for detecting at least a 0.2 correlation identified that 258 subjects would be required. To account for potential non-response of ~15%, the aim was to recruit 316 child/parent dyads.

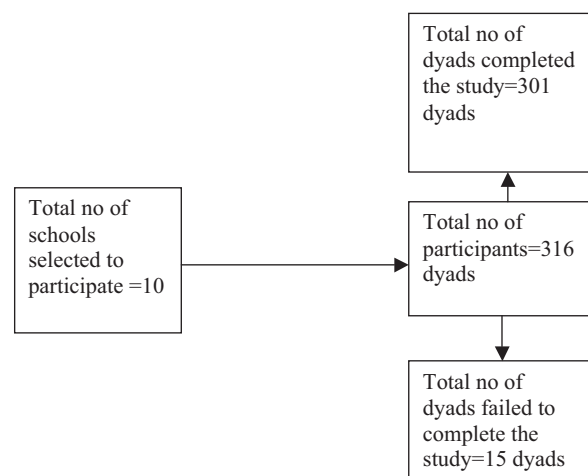
One in four kindergartens was selected from Hong Kong Island (40 kindergartens in the sample frame) and a total of ten kindergartens participated. Within each kindergarten, children

were randomly selected to participate. Children were chosen randomly using simple random tables. Their parents were contacted through the kindergartens with an explanation of the objectives of the project and written consent was obtained. Participation was voluntary and no additional efforts were made to enrol the subjects. Eligibility criteria included healthy children who were 5 years of age and were accompanied by the primary caregiver. Children with specific learning disabilities, students requiring learning support, and caregivers who could not read and write Cantonese were excluded from the study. The flow diagram summarizing study recruitment procedures and final participation is shown in Fig. 1.

### 2.2. Data collection

On arrival dyads were assigned identifiers and caregivers underwent literacy assessment while their children underwent clinical examinations; assessments were conducted simultaneously (and blind), so the assessors did not know about the outcomes of the assessment running in parallel. Initial administration of a word-recognition instrument, Hong Kong Rapid Estimate of Adult Literacy in Dentistry-30 (HKREALD-30) [33] to caregivers was conducted as an interview process (administration time: ~2 min) by trained calibrated examiners, immediately followed by a comprehension literacy assessment, Hong Kong Oral Health Literacy Assessment Task for Paediatric Dentistry (HKOHLAT-P) [34] which was a “paper-and-pencil” task (administration time: ~40 min). It also asked the participants to provide additional background questions on family socio-demographics and caregivers' self-reported reading habits (administration time: ~5 min).

Children's oral health status was assessed by trained and calibrated examiners, using two assessment methods. Dental caries experience was assessed using the methods and criteria as prescribed by the WHO basic oral health survey protocol whereby the number of decayed, missing and filled teeth (dmft) are counted [36]. For the age group in this study, the possible range was 0–20. Additionally, the oral hygiene status of the children was assessed



**Fig. 1.** Flow diagram of participants enrolled in the study.

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