平成30年9月12日	委員提出資料１
第1回　歯科口腔保健の推進に係るう蝕対策ワーキンググループ	

公衆衛生からみた口腔疾患の課題

東北大学大学院　小坂　健

世界の疾病負担研究2010

The Global Burden of Disease (GBD) 2010 Study

Table 1. Global Prevalence of Oral Conditions in 2010, by Gender

Rank	Condition Name	Overall	
		n[a]	%
1	Untreated caries of permanent teeth	2,431,636	35.29
2	Tension-type headache	1,431,067	20.77
3	Migraine	1,012,944	14.70
4	Fungal skin diseases	985,457	14.30
5	Other skin and subcutaneous diseases	803,597	11.66
6	Severe periodontitis	743,187	10.79
7	Mild hearing loss	724,689	10.52
8	Acne vulgaris	646,488	9.38
9	Low back pain	632,045	9.17
10	Untreated caries of deciduous teeth	621,507	9.02
36	Severe tooth loss	158,284	2.3

[a]Numbers of cases reported in thousands.

有病率
ランキング
全291疾病中

1位永久歯の未処置う蝕

6位　歯周病

10位乳歯の未処置う蝕

Marcenes W, Kassebaum NJ, Bernabe E, Flaxman A, Naghavi M, Lopez A, Murray CJ. Global burden of oral conditions in 1990-2010: a systematic analysis. *Journal of Dental Research* 2013;**92**(7):592-7.

DALYとQALYについて

費用効用分析 に使われる。

- **DALY** *disabled adjusted life year*　**障害調整生命年**

【早世により失われた年数YLL＋重み付けした障害の年数YLD】

Disability weight (0健康-1死亡)	
中等度の心不全	0.068
Severe tooth loss	0.073
中等度の脳卒中後遺症	0.074

- **QALY** q*uality adjusted life year*　**質調整生存年**

【効用値 x 生存年数】 効用値QOL (0死亡-1健康)

1QALY 上げるためコスト　ICER: incremental cost-effective ratio

口腔障害に対する年齢調整後DALY

日本の歯科疾患の疾病負担は小さくない

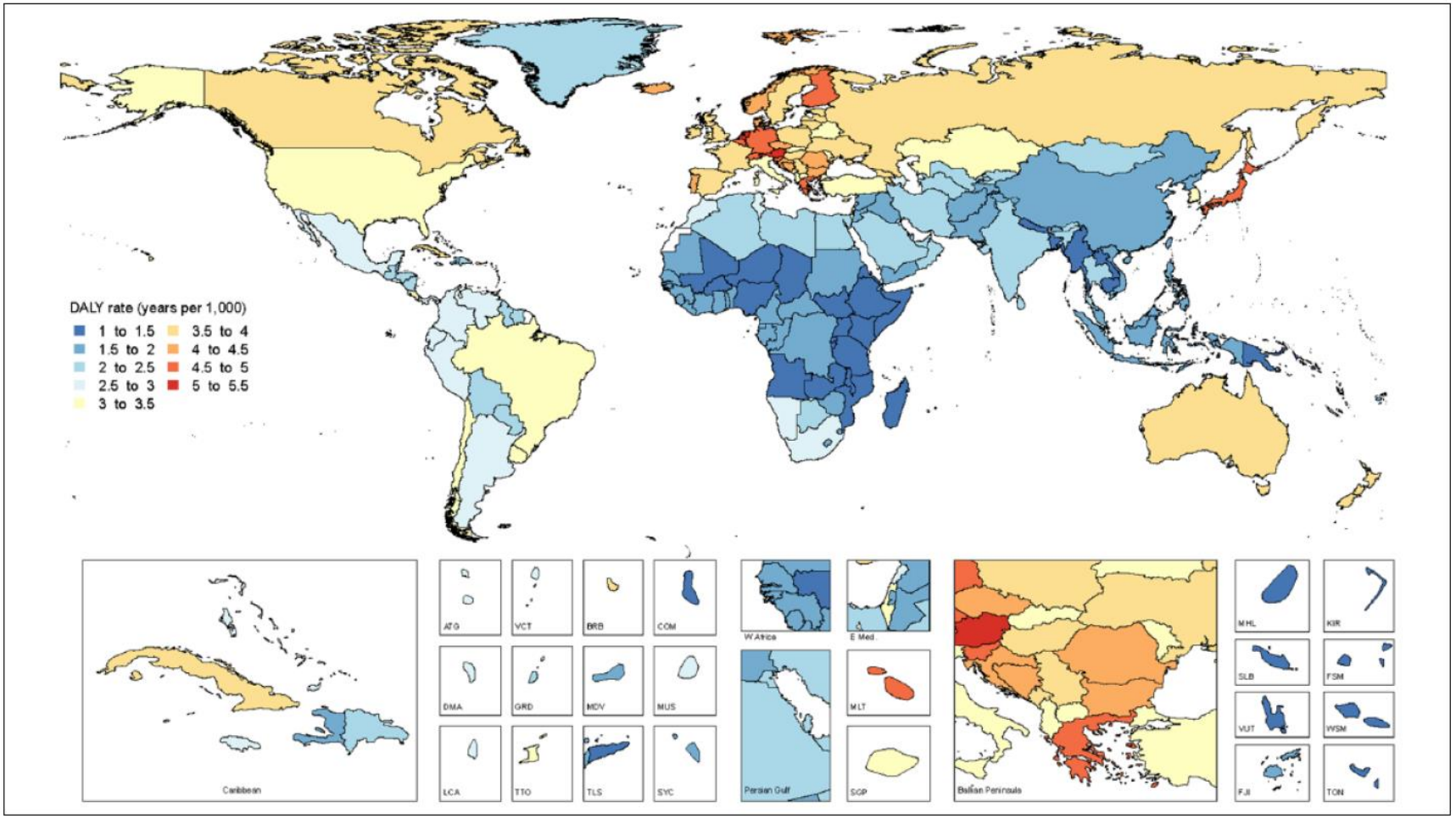
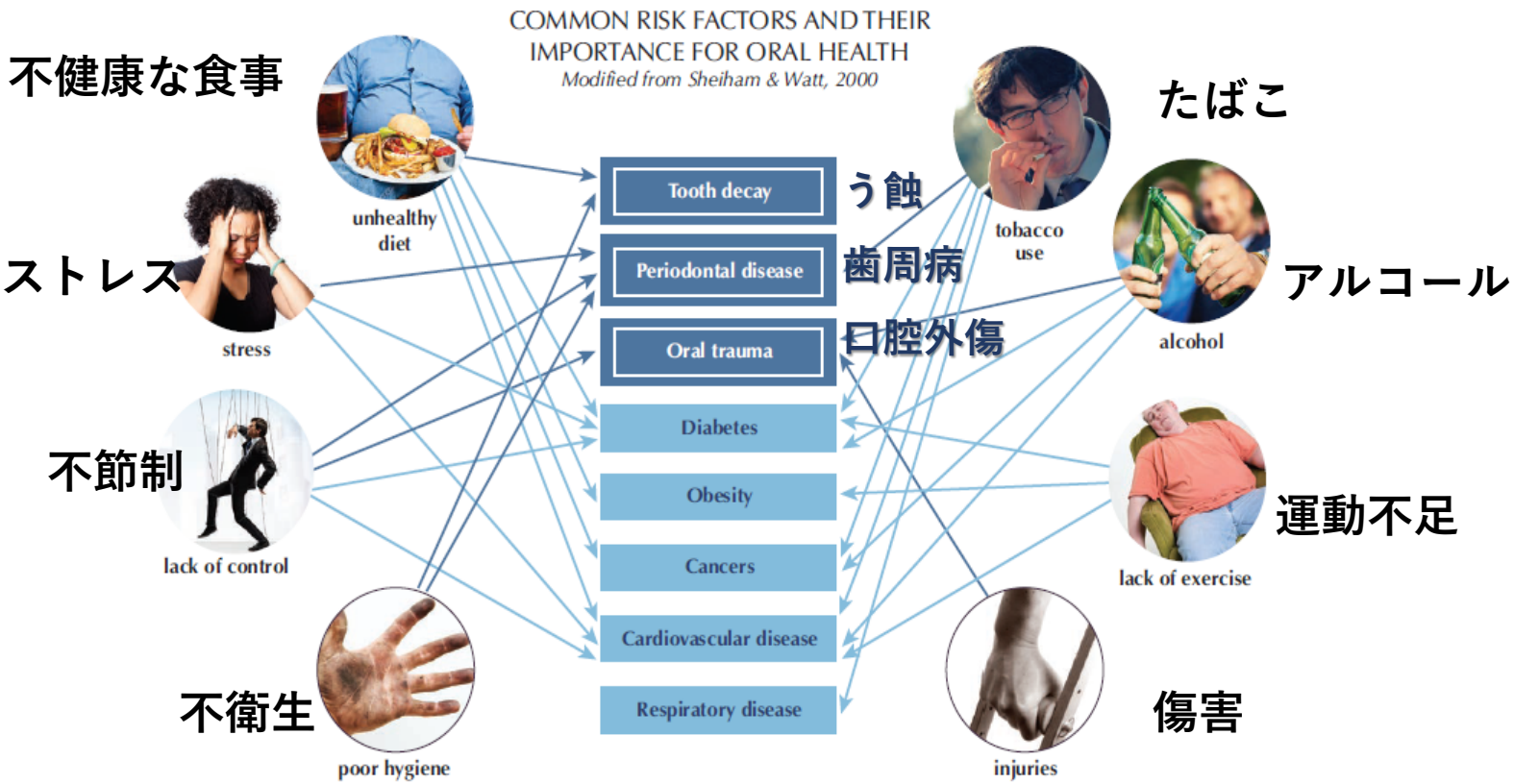


Figure 2. World map of age-standardized disability-adjusted life year (DALY) rates (per 1,000 population) for all oral conditions combined in 2015, both sexes.

Journal of Dental Research 2017, Vol. 96(4) 380–387

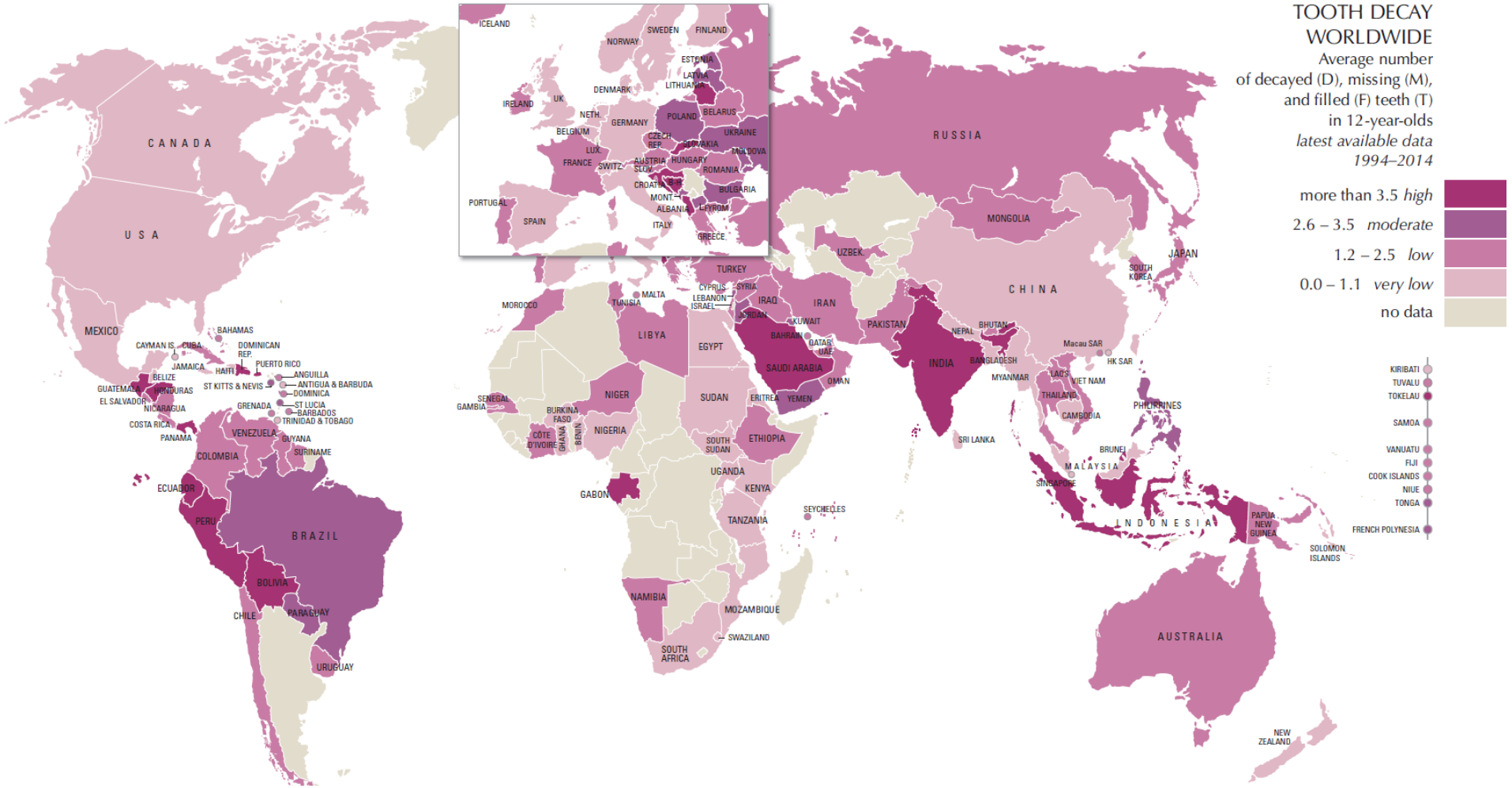
社会的決定要因及びコモンリスクファクターと口腔保健への重要性



The Oral Health Atlas 2nd edition, FDI

世界のう蝕の状況と疾病負担

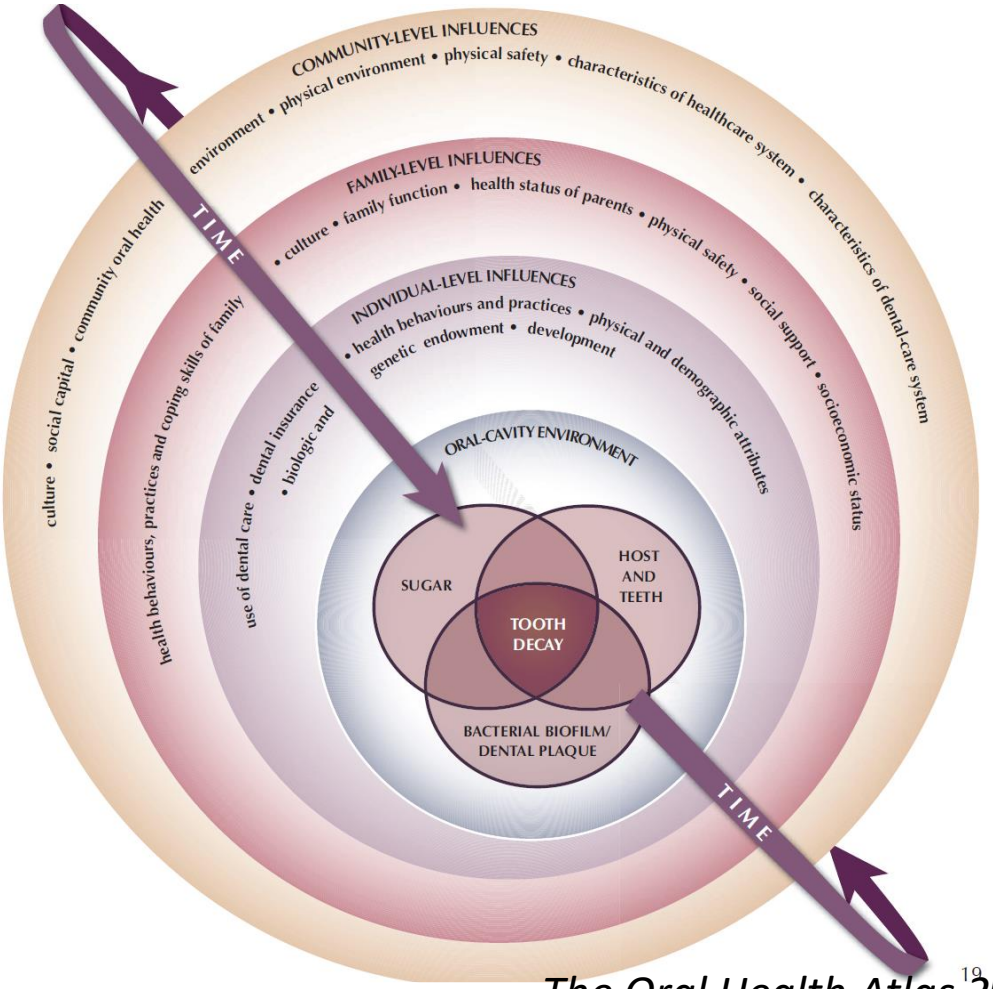
日本は一番低いグループではない。



The Oral Health Atlas 2nd edition, FDI

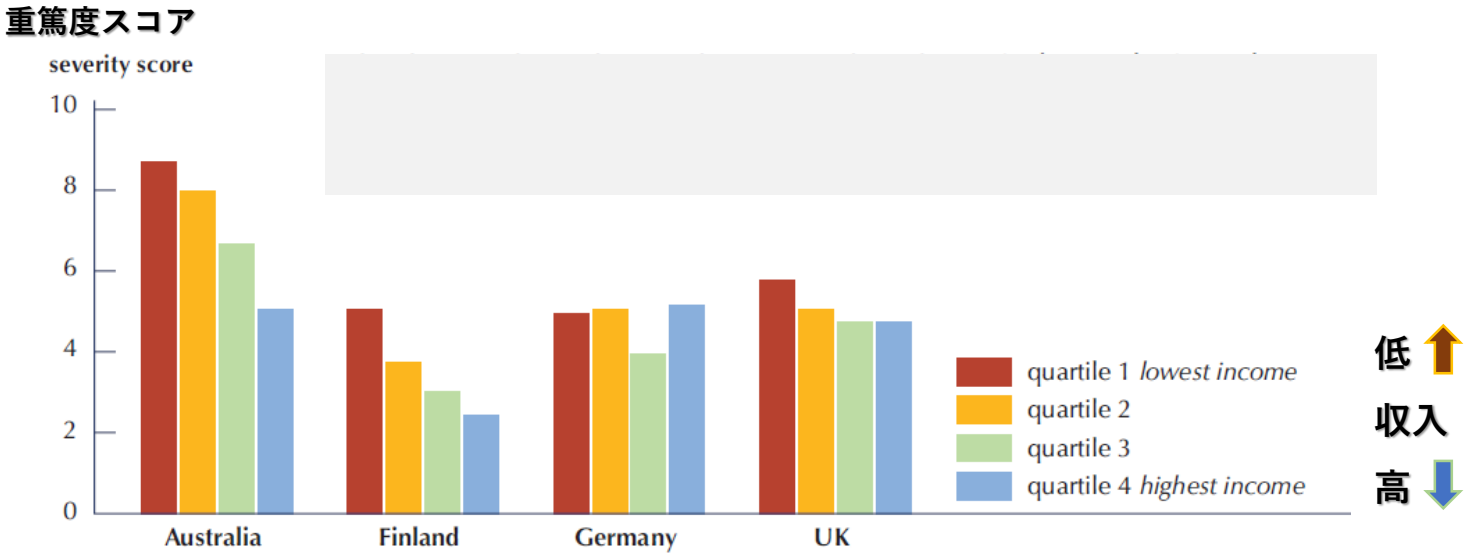
う蝕は単一因子の疾病ではない。

砂糖や口腔細菌、ホスト条件に加えて
個人レベル、家族レベル、コミュニティレベルで影響される。

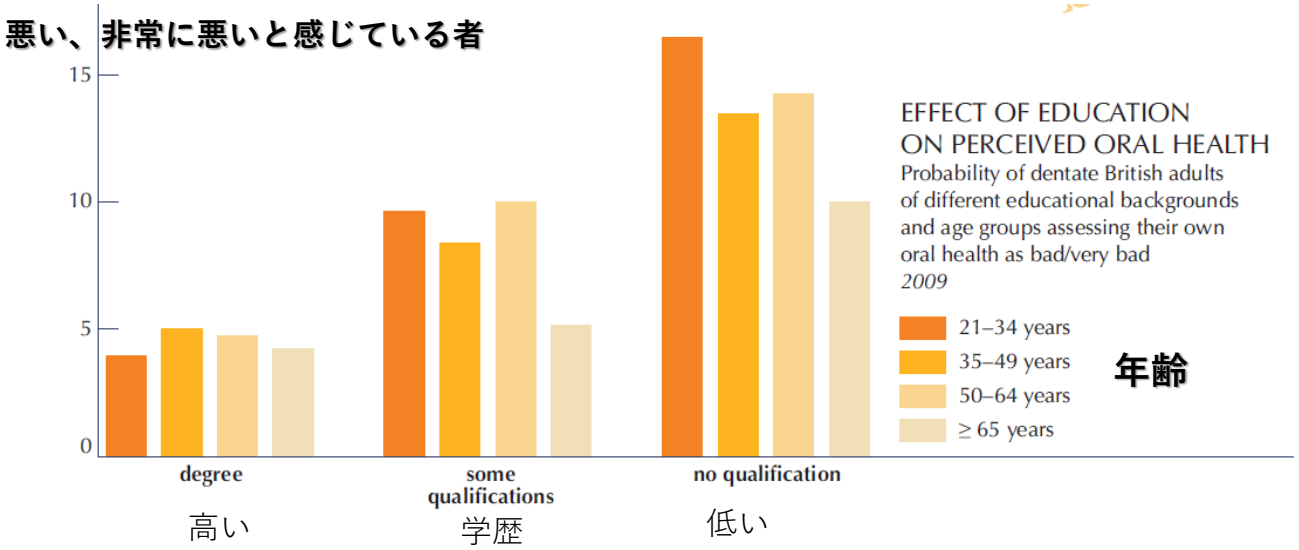


The Oral Health Atlas 2nd edition, FDI[19]

口腔保健における不平等



世帯収入による口腔保健QOLの勾配



口腔の健康状態：学歴の影響

The Oral Health Atlas 2nd edition, FDI

世界168か国の砂糖に関連した歯科疾患及びその医療コスト

Discovery!

Global Burden of Sugar-Related Dental Diseases in 168 Countries and Corresponding Health Care Costs

Journal of Dental Research
2017, Vol. 96(8) 845–854

DOI: 10.1177/0022034517708315
journals.sagepub.com/home/jdr

T. Meier[1,2], P. Deumelandt[1], O. Christen[1,2], G.I. Stangl[1,2], K. Riedel[3], and M. Langer[3]

世界で1.4million DALY　医療費172billion USD≒19兆円
砂糖関連が26.3%を占める

Abstract

Oral diseases such as dental caries, edentulism (tooth loss), periodontal disease (PD), and oral cancer currently constitute an increased major public health burden across the globe, with significant differences between countries. One of the main drivers of caries, edentulism, and PD is the excessive intake of sugars. Here, we aimed to quantify the global sugar-related dental health and cost burden in the year 2010. This study used a health-econometrical model to calculate the disease burden as well as the direct and indirect costs attributable to the intake of free sugars (mono- and disaccharides [MDS]). To this end, several databases from the Institute for Health Metrics and Evaluation (IHME), Organisation for Economic Co-operation and Development (OECD), Food and Agriculture Organization (FAO), and World Bank were used. In total, the corresponding disease burden in 168 countries and economic burden in 31 OECD countries were quantified. In 2010, the consumption of MDS was associated with a global dental disease burden of 4.1 million disability-adjusted life years (DALYs; 95% uncertainty interval [UI]: 2.1 to 7.4 million DALYs), with 2.7 million DALYs from MDS-related caries and 1.4 million DALYs from PD. In terms of economic costs, MDS-related dental diseases were associated with a global financial burden of 172 billion US dollars (USD; 95% UI: 91 to 295 billion USD), the largest share of which (151 billion USD) was incurred in OECD countries. Overall, 26.3% (95% UI: 13.3% to 47.5%) of the total global oral disease burden was attributed to the consumption of MDS. The present study emphasizes the need to further address the role of free sugars in oral health and nutrition policy. Although the largest share of the economic burden was accounted for by OECD countries, emerging economies should address this challenge early on in national public health policies if they are to avoid disease and the prospect of increased cost burdens.

歯科分野介入の費用効用分析

Received: 30 January 2017 | Accepted: 1 August 2017

DOI: 10.1111/cdoe.12336

ORIGINAL ARTICLE

WILEY COMMUNITY DENTISTRY AND ORAL EPIDEMIOLOGY

The cost-effectiveness of oral health interventions: A systematic review of cost-utility analyses

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Abstract

Objectives: To assess the usage of cost-utility analysis (CUA) in oral health interventions and to evaluate the methods used and the reporting quality of CUA in publications on oral health interventions.

Methods: A systematic review was performed on literature published between 2000 and 2016 where cost-utility analyses of oral health interventions were included. The reporting quality of these oral health CUAs was assessed against the Consolidated Health Economic Evaluation Reporting Standards (CHEERS) checklist.

Results: Of the 6637 publications identified initially, 23 met the inclusion criteria. Of these, 14 (61%) had been published in the last 6 years. Included studies were on oral cancer (n = 6), provision of dental prosthesis (n = 6), dental caries (n = 4), periodontal diseases (n = 3), antibiotic prophylaxis (n = 2), dento-facial anomalies (n = 1) and dental service provision (n = 1). Twenty-one studies were able to identify the most cost-effective intervention among the different options compared. Of the 23 studies identified, 15 (65%) used quality-adjusted life years (QALY) as the outcome measure, and 18 (78%) reported an incremental cost-effectiveness ratio. The economic perspective was clearly stated in 13 articles (57%). Twenty studies (87%) reported the discount rate, and 22 (96%) undertook sensitivity analysis. The reporting quality of studies, appraised by the CHEERS checklist, varied from 75% to 100% (median 92%).

QALYを用いた研究

Health outcome		
QALY	● 他の先行研究から引用：8	15 (65%)
DALY	● タイムトレードオフ：1	2 (9%)
QATY	● Euro-QoL-5D-3L: 4	2 (9%)
QAPY	● Child Health Utility 9D: 1	2 (9%)
QLTY	● SF-6D: 1	1 (4%)
Net tooth years and prosthetic-adjusted net tooth years		1 (4%)

QALY, quality-adjusted life years; DALY, disability-adjusted life years; QATY, quality-adjusted tooth-years; QAPY, quality-adjusted prosthesis years; QLTY, quality-of-tooth-years.

Child Health Utility 9D

- 小児のう蝕（自宅訪問/電話vsコントロール）

Community Dent Oral Epidemiol 2015; 43; 560–568

COMMUNITY DENTISTRY AND ORAL EPIDEMIOLOGY

Relative cost-effectiveness of home visits and telephone contacts in preventing early childhood caries

Rongzhen Koh[1], Margaret Pukallus[2], Sanjeewa Kularatna[3], Louisa G. Gordon[3], Adrian G. Barnett[4], Laurence J. Walsh[1] and Wan Kim Seow[1]

[1]Centre for Paediatric Dentistry, Oral Health Centre, The University of Queensland, Herston, Qld, Australia, [2]Oral Health Program (Logan-Beaudesert Division), Metro South Health, Logan City, Qld, Australia, [3]Centre for Applied Health Economics, Menzies Health Institute, Queensland, School of Medicine, Griffith University, Meadowbrook, Qld, Australia, [4]Institute of Health and Biomedical Innovation, Queensland University of Technology, Brisbane, Qld, Australia

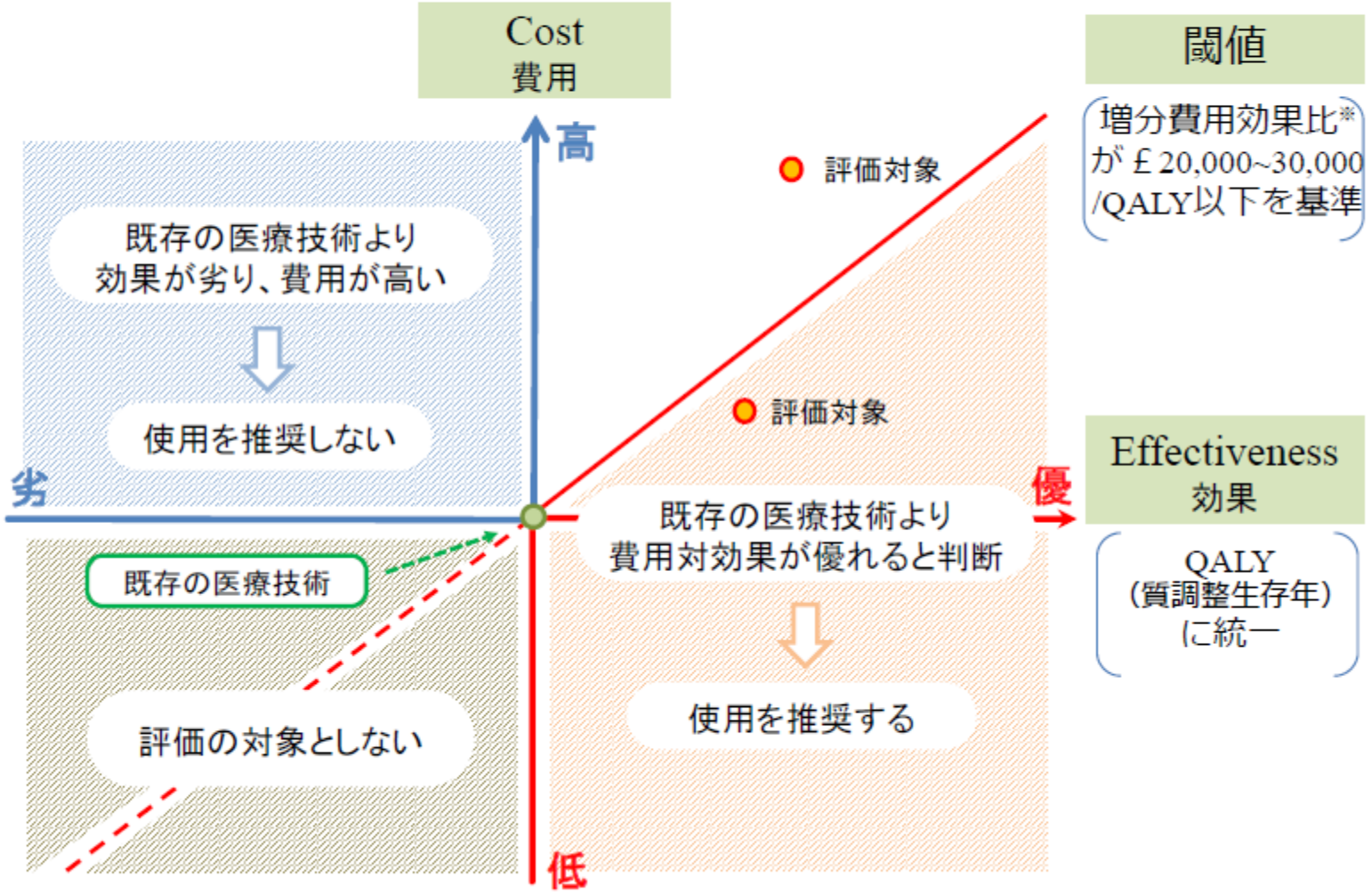
Koh R, Pukallus M, Kularatna S, Gordon LG, Barnett AG, Walsh LJ, Seow WK. Relative cost-effectiveness of home visits and telephone contacts in preventing early childhood caries. Community Dent Oral Epidemiol 2015; 43: 560–568.

Abstract – *Objectives:* To evaluate the cost-effectiveness of a home-visit intervention conducted by oral health therapists relative to a telephone-based alternative and no intervention. *Methods:* A Markov model was built to combine data on dental caries incidence, dental treatments, quality of life and costs for a cohort of children from age 6 months to 6 years. The probabilities of developing caries and subsequent treatments were derived primarily from the key intervention study. The outcome measures were costs (US dollars), quality-adjusted life years (QALYs) and the number of carious teeth prevented. One-way and probabilistic sensitivity analyses were used to test the stability of the

歯科衛生士による6カ月に5回の自宅訪問や電話介入は、小児（就学前）のう蝕予防において費用対効果に優れていた

(1)イギリス

費用対効果にかかる評価の考え方



※ 増分費用効果比 =既存と比べた費用の差 / 既存と比べた効果の差

厚生労働省中医協資料

まとめ

- 歯科疾患の疾病負荷は依然として低くない、世界の中では日本は高い傾向
- 有効性の認められた歯科疾患の予防についてQALY等の指標により、他分野との比較をしていくことが必要
- 社会的弱者（障がい者、生活困窮者含む）への対応が必要
- 保健事業の効果を測定・評価するための定期的なデータ収集のスキームの構築が必要
- 砂糖の消費の削減を含めたコモンリスクファクターアプローチが重要