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論文題目	Hospitalization risk factors for children's lower respiratory tract infection: A population-based, cross-sectional study in Mongolia (モンゴルにおける小児の下気道感染症による入院リスク要因：横断研究)		
(論文内容の要旨)			
<p>One third of communicable diseases in Mongolia occur from respiratory infections, which are the second leading cause of child mortality; also, half of all Mongolian householders smoke tobacco. However, currently there is a severe lack of useful population-level data on which to base appropriate prevention strategies. Our study aims to address this need to assess the potential risk factors for lower respiratory tract infection (LRTI)-related hospital admissions in Mongolian children.</p> <p>A population-based cross-sectional study was conducted in Bulgan, sparsely populated rural Mongolia in 2013, and 1,013 mother-child pairs were included.</p> <p>Data on socioeconomic status, number of family members, nomadic status, smoking place, number of cigarettes smoked per day, healthcare-seeking behaviour, and breastfeeding duration were collected by face-to-face questionnaire. The questionnaire was initially pilot-tested among 15 women who lived in the study field. Trained research assistants then conducted structured interview.</p> <p>Records of child birthweight and hospitalization for LRTI were transcribed from the Maternal and Child Health Handbook (MCH Handbook), and anthropometric measurements on weight and height of the mother and child were taken during the door-to-door survey.</p> <p>This study protocol was approved by the Ethics Committee of the National Center for Child Health and Development, Japan, as well as the Institutional Scientific Board of the National Center for Maternal and Child Health and the Ethics Committee of the Ministry of Health, Mongolia. The written informed consent was obtained from women prior to study recruitment. This included approval from mothers on behalf of their children. All data were analysed anonymously.</p> <p>Statistical analysis was performed using Stata version 13.0. The basic characteristics of study participants were described using the chi-squared test. Multivariable analyses were performed for the potential risk factors contributing to children being admitted to hospital for LRTI, including maternal age and education, wealth index, smoking of any family member, place of smoking, number of cigarettes smoked per day by any family member, nomadic status, family crowding, healthcare-seeking behaviour, sex of the child, exclusive breastfeeding, low birthweight, and use of stoves.</p> <p>It was found that 38.9% of children were admitted to hospital with LRTIs. Indoor smoking among family members, low birthweight, being a male child,</p>			

exclusive breastfeeding and health-seeking behaviors showed significant associations with hospital admission.

Concerning the confounding factors, the estimated population attributable fraction was 14.7% for cigarette smoking inside the home, 33.1% for low birthweight, and 40.6% for the absence of healthcare-seeking behaviour. These figures represent the reduction in LRTI-related hospitalization of children that would occur if the respective risk factors were reduced to ideal levels.

Current findings suggest that smoking prevention among adults, especially indoor smoking, is crucial to decrease LRTIs and hospital admission among children in Mongolia. Furthermore in our study, the number of cigarettes smoked by family members showed a dose-response relationship, implying that controlling the number of cigarettes may motivate parents to smoke less and reduce children's exposure to secondhand smoke and the risk of respiratory disease. In addition, maternal education to improve exclusive breastfeeding and healthcare-seeking behavior, and low birthweight prevention initiatives, are also important.

More than 20% of total neonatal deaths in developing countries are caused by serious infections every year, of which 50% are caused by neonatal pneumonia. A crucial contribution of this study is addressing this issue by collecting population-level primary data from door-to-door surveys and from the MCH Handbook in a developing country. This is the first study in Mongolia to focus on hospital admission rates and potential risk factors associated with children's LRTI.

(論文審査の結果の要旨)

途上国において感染症対策は小児保健上の大きな課題である。本研究はモンゴルの Bulgan 県 (人口 5 万 3 千人) に居住する母親を対象として、生活習慣・環境・社会経済状況及び子どもの身体的特徴と下気道感染による入院等のデータに基づく疫学研究を実施し、子どもの下気道感染による入院のリスク因子の分析を行った。パイロット調査を経て、2013 年に個別訪問による質問票調査を実施し、調査時点で 3 歳児を持つ母親を悉皆的にサンプリングし、1013 組 (93.8%) の母親の参加を得た。妊娠・出生時の状況は母子手帳の情報から系統的に収集し、横断的な検討に加えた。

得られたデータの多変量解析の結果、室内での家族の喫煙、医療希求行動が積極的であること、小児の性別 (男性)、4 か月未満の母乳育児、低出生体重 (2500g 未満) が、対象とした 3 歳児における下気道感染症の入院の統計学的に有意なリスク因子として検出された。さらに交絡因子を調整した人口寄与危険割合を計算した結果、室内における家族の喫煙が 8.1%、出生時の低体重が 1.9%、医療希求行動の積極性が 4%、本研究の対象となった 3 歳児の下気道感染症による入院に促進的に寄与し、逆に、完全母乳哺育が -52.4% と予防的に寄与することが示唆された。

以上の研究はモンゴルにおける小児の下気道感染による入院リスクの解明に貢献し途上国の小児保健の増進に寄与するところが大きい。

したがって、本論文は博士 (社会健康医学) の学位論文として価値あるものと認める。

なお、本学位授与申請者は、平成 29 年 3 月 1 日実施の論文内容とそれに関連した試問を受け、合格と認められたものである。