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2 Prescription Practices

3
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21 What can we do to address the issues related to prescription practices in impoverished areas?
22 Japanese medical students, who faced with the situation, gave their ideas based on their experiences and
23 knowledge from their own country.

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1 ABSTRACT.

2 During a two-week public health internship organized by Projects Abroad in impoverished areas in
3 Cambodia, the authors participated in health check-ups and outreach activities. We identified issues such as
4 polypharmacy and medication misuse. These problems stem from symptom-based prescriptions without
5 considering individual patient conditions due to limited diagnostic equipments and medications. Our solution
6 involved suggesting a documentation akin to Japan's prescription record books, and Drug Information Leaflets
7 (DILs). Prescription record books would enable patients to record the medications they purchased at the
8 pharmacy, so that physicians would know what medications patients are taking during their health checkups,
9 and thus prevent polypharmacy. In addition, the DILs included medication details and illustrations,
10 considering the low literacy rates in the areas. We emphasized the need for sustained non-communicable
11 diseases (NCDs) treatment and the potential of external perspectives to introduce innovative healthcare
12 approaches and improvements within local communities.

15 Key Words:

16 Cambodia; drug information leaflet; health check-up; outreach activities; public health internship;
17

18 THE EXPERIENCE.

19 The first and second authors of this manuscript participated in a two-week public health internship organized
20 by Projects Abroad in Phnom Penh, the capital of Cambodia, from February to March 2023. During this
21 period, we visited various locations such as elementary schools, community spaces, and facilities for people
22 with disabilities in impoverished areas on the outskirts of Phnom Penh, conducting outreach activities such as
23 basic health check-ups and outreach lessons on health. In Japan, we engage in fieldwork as medical
24 students, focusing on identifying community challenges and considering how medical students can offer
25 solutions. Our focus area is characterized by single-parent households whose children frequently suffer from
26 relative poverty and a diverse foreign resident population, especially from the Asian region.¹ We participated
27 in this internship to learn lessons on how to sustain and enhance our outreach activities in Japan. In this
28 paper, we address the issues related to prescription practices observed through health check-ups during the
29 internship, such as issues with polypharmacy and medication misuse.

30 We visited each location every 1-2 weeks for the health check-ups with a local pediatrician and local staff
31 from Projects Abroad. We brought simple diagnostic equipment such as thermometers, sphygmomanometers,
32 glucometers, pulse oximeters, paper-based medical records, and a medication box (Fig 1). The primary target
33 of the health check-ups was older people, residing in the surrounding areas. Since we visited in the daytime,
34 most of them consisted of women, who keep their houses. We conducted brief health interviews and vital sign
35 checks for patients. We also prescribed medications from a limited range of drugs simply based on the
36 patient's symptoms without making a specific diagnosis, since the diagnostic equipment and medications
37 were limited. For example, if a patient complained of stomachache, we prescribed omeprazole as a response,
38 irrespective of the specific location or nature of abdominal pain. This may not happen in high-income
39 countries, but this is not a rare practice in low and middle-income countries, especially in impoverished areas.
40 Through this internship, we have noticed two prescription-related issues: polypharmacy and medication
41 misuse. First, the access to medicines may promote polypharmacy in Cambodia. As there are over 3000

1 pharmacies in cities in Cambodia,² citizens could get medications without prescriptions at lower costs
2 compared to medical institutions, potentially leading to self-medication.³ When self-medication is the main
3 source of pharmacotherapy, it can easily lead to polypharmacy especially considering that our targets were
4 older women, who generally have multiple symptoms. The clinical implications of polypharmacy cannot be
5 overlooked; for instance, studies have reported that elderly patients prescribed more than five
6 medications experience a 4.5-fold increase in the incidence of falls(1),⁴ and free-drug combination
7 regimen increased the risk of medication non-compliance by 24% compared with fixed-dose
8 combination.⁵ In our check-up, it is noteworthy that the most commonly prescribed medication for
9 suspected hypertension were calcium channel blockers, which involves numerous side effects such as
10 constipation. To treat these adverse events, patients prescribe medicine by themselves from
11 pharmacies, resulting in prescribing cascades. However, through these repetitions, we could neither
12 identify if patients took medications through pharmacies nor what kind it was, since in some cases, patients
13 themselves did not even know. Therefore, we proposed introducing a documentation similar to Japan's
14 prescription record books, which has been widely adopted to address polypharmacy. The prescription record
15 book enables different facilities to share patients' medication records and serves to prevent excessive or
16 duplicate prescribing. It would be helpful if patients could record the medications they purchased at the
17 pharmacy so that physicians would know what medications patients take during their health check-ups.

18 The second issue is medication misuse. The local physician verbally explained to patients about the effects,
19 dosage, timings (such as morning, afternoon, evening, or before or after meals), and quantities of each
20 prescribed medication. It is difficult to remember the details of medications, just by listening to the explanation,
21 especially when multiple medications are prescribed. Some people overdose on their medications, while
22 others have low adherence due to a lack of understanding of the role of their medications. The previous study
23 focusing on impoverished areas of Cambodia has indicated that individuals with lower family income tend to
24 exhibit lower adherence rates.⁶ Since our target area is characterized by relative poverty, addressing the
25 medication information is significant. Therefore, we designed Drug Information Leaflets (DILs) indicating
26 detailed information about each medication, which has been reported to improve medication adherence.⁷ (Fig
27 2). We tried to use more charts and photographs than text, considering the literacy rates in Cambodia. In
28 Cambodia, the literacy rate for individuals aged 15 and above was reported as 73.6% (males: 84.7%, females:
29 64.1%) in 2007,⁸ and 84% in 2021.⁹ The area we visited for health check-ups consisted mainly of older
30 women, and considering the particularly impoverished nature of our target region, the literacy rate would be
31 much lower. The DILs were collaboratively discussed with the local staff, physicians, and other volunteers,
32 focusing on their necessity.

33 Those issues of polypharmacy and medication misuse can inadvertently jeopardize health. In Cambodia, like
34 in other countries, non-communicable diseases (NCDs) are becoming an important health issue. However,
35 the untreated rate of NCDs in Phnom Penh is high, with reported rates for hypertension being 46.1% in males
36 and 39.9% in females, and for diabetes, 44.3% in males and 37.2% in females.¹⁰ This health check-up project
37 plays an important role in caring for NCDs, which are chronic conditions, by continuously visiting specific
38 areas. It is necessary to address polypharmacy and medication misuse to maximize the effectiveness of these
39 health check-ups. Using our medication record book and DILs could help solve some of these problems.

1 Recent outreach activities in Japan have been challenged by the need to respect local cultures and customs
2 in targeted areas without overstepping boundaries as outsiders. However, our experience highlighted the
3 potential to incorporate new approaches and methods from external perspectives. For example, introducing
4 medication record books or DILs could contribute to local healthcare improvement. Based on this experience,
5 we aim to actively explore approaches that consider the resources and needs of the local community,
6 examining the issues from an overarching perspective rather than feeling constrained as outsiders. Embracing
7 the role of people from different areas or regions, we aspire to explore implementable approaches that could
8 gradually disseminate and become integrated into the region's healthcare landscape, even in the years and
9 decades to come.

11 SUMMARY - ACCELERATING TRANSLATION

12 プロジェクト・アブロードがカンボジアの貧困地域で企画した 2 週間の公衆衛生インターンシップで、著者
13 らはアウトリーチ活動の一環として地域住民の健康診断に参加した。私たちは、医療機器や薬剤の制限から、
14 個々の患者の状態を診断したり考慮しない症状ベースの処方起因する、ポリファーマシーや薬剤の誤用な
15 どの問題を特定した。私たちはこれらの問題に対して日本のお薬手帳や薬剤情報提供書のような文書の作成
16 を提案した。お薬手帳は、患者が薬局で購入した薬を自身で記録してもらい健康診断の際に医師に提示する
17 ことで患者がどのような薬を服用しているかを共有しポリファーマシーの予防につながると考えられた。さ
18 らに本地域の識字率が低いことを考慮し、薬剤情報提供書には薬の詳細とイラストを掲載した。私たちは、
19 非感染性疾患の対処において持続的な治療の必要性と、革新的な医療アプローチや改善を地域社会に導入す
20 るための外部からの視点の可能性を強調した。

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1 **FIGURES AND TABLES.**

2

3 **Figure 1.** Conduction of Health Check-up

4












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1 **Figure 2. Drug Information Leaflets**

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3 The DILs included a photograph of the medication, names, effects, dosage, and timings (morning, afternoon, evening; before or after meals) written in the Khmer language.

4

ឈ្មោះថ្នាំ	ពេលវេលា (○=1 គ្រាប់)			អាហារ		កម្មវិធី
	ព្រឹក	ថ្ងៃត្រង់	ល្ងាច	មុន	ប្រាកប	
 Multivitamin					○	អនុវត្តជាមួយទឹក, ភាពអាក្រក់, ភាពស្លេកស្លាំង ※ ម្តងក្នុងមួយថ្ងៃ
 PARACETAMOL	○	○	○		○	ឈឺក្បាល, គ្រុន, គ្រុនក្រហម
 AMLOCOR					○	5mg, 10mg សម្រាប់ព្យាបាល
 CALVIT-D	○	○	○			កង្វះជាតិកាល់ស្យូម, ជំងឺពុករលាក
 eyedrop						ចក្ខុវិស័យភ្នែក ※ 1-3 ដងក្នុងមួយថ្ងៃ
 LOKIT	○		○		○ (15 នាទីមុន)	ឈឺពោះ
 CTZ						អាសាវាតូក, អាសាវាតូមុះ ※ ម្តងក្នុងមួយថ្ងៃ
 Diabetmin					○	ជំងឺទឹកនោមផ្អែម ※ អាស្រ័យលើអ្នកជំងឺ
 DECOLGEN						ឈឺក្បាល, គ្រុន ※ រៀងរាល់ 6 ម៉ោងម្តង

ឈ្មោះថ្នាំ	ពេលវេលា (○=1 គ្រាប់)			អាហារ		កម្មវិធី
	ព្រឹក	ថ្ងៃត្រង់	ល្ងាច	ពីមុន	នាពេលប្រាកប	
 ACEMUC	○	○	○			កំហក
 NEO-K	○	○	○			ក្អក, កំហក
 ROYAL-D						កង្វះជាតិស្រូវ, សារធាតុប៊ី, ស៊ីនីតាមីន
 Strepsils						ឈឺក
 smecta	○	○	○			ពត
 Antacil	○	○	○		○ (1-2 ម៉ោងប្រាកប មក)	ឈឺពោះ, ចុងដង្ហើម
 Almex						រោគសញ្ញាដែលបណ្តាលមកពីជំងឺស៊ុត ※ ម្តងក្នុងមួយថ្ងៃ
 Sorbitol	○				○	ការទល់លាមក

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Accepted