



Research Article

What can be learned from Medicine Labelling Initiatives in Asia, with a focus on Antibiotics?

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Abstract

Recognizing and distinguishing medicine, both in appearance and packaging, is fundamental to ensure proper and safe use. Therefore, medicine labelling initiatives hold immense potential for improving health literacy, patient involvement, and the impact of public health campaigns. In this commentary, we discuss the relevance of medicine labelling initiatives, with a particular focus on antibiotics, and delve into their potential benefits, challenges, and the valuable lessons they offer. Drawing insights from the experiences of India and Bangladesh, two Asian countries with relatively easy access to antibiotics, we reflect on the value of robust labelling campaigns on public health. Our analysis is based on diverse data sources, including unpublished qualitative data collected by the AntiBiotic ACcess and USe (ABACUS) consortium. Finally, we present recommendations to harness the full potential of ongoing labelling initiatives for the benefit of global public health. These recommendations include the sharing of data and best practices for harnessing the full potential of the ongoing labelling initiatives for the benefit of global public health. Information to be shared should include details on the physical feature design, multi-sectoral collaboration, implementation process, assessment of impact, public health campaigns, bottlenecks and facilitators.

Keywords: Global health; Medicine labelling; Responsible medicine use; Health literacy; Antibiotic stewardship

Introduction

Health literacy is undeniably a vital component of global public health, enabling individuals to navigate healthcare systems and make informed decisions about their well-being [1-3]. It empowers people to understand and engage with health information, contributing to healthier communities and improved healthcare outcomes. Medicine labelling initiatives to inform the public on relevant aspects of medicine, hold the promise of enhancing health literacy by providing visual cues to both users and Healthcare Workers (HCWs). Relevant visual cues can strengthen public efforts towards responsible medicine use practices. In this context, we spotlight two recent examples of medicine labelling programs implemented in South Asia. The ‘Red Line’ campaign, introduced in 2016, in India, involved the addition of a red line to the packaging of prescription medicine, including but not limited to antibiotics [4]. This simple visual cue served to help identify prescription medicine, discourage self-medication, and enhance awareness regarding the risks associated with misuse (Figure 1A). Later on, another visual feature, a red bordered warning box, was added to antibiotic packaging as part of Schedule H1 (i.e., a national health regulation, part of the Drugs and Cosmetics Act 1940, to limit the antibiotic dispensing without medical prescription [5].) In 2022, Bangladesh announced the establishment of a ‘Red Label’ system for identifying antibiotics involving red marks on their packaging (Figure 1B) (WHO). Under this initiative, antibiotics are marked with a distinctive red label to signify their critical importance and the need for cautious use (WHO). The campaigns share a common goal of addressing the pressing issue of antibiotic resistance by raising awareness among communities and HCWs about responsible medicine and antibiotic use [6].

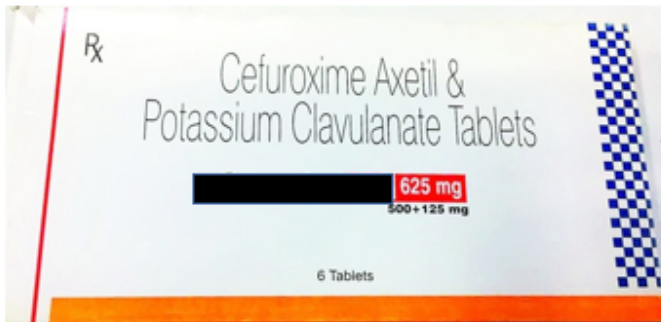
In this commentary, we discuss the relevance of such medicine labelling initiatives, with a particular focus on antibiotics, and delve into their potential benefits, challenges, and the valuable lessons they offer. Drawing insights from the experiences of India and Bangladesh, two Asian countries with relatively easy access to antibiotics, we reflect on the value of robust labelling campaigns on public health. Our analysis is based on diverse data sources, including unpublished qualitative data collected by the AntiBiotic ACcess and Use (ABACUS) consortium (Supplementary Materials).

The Potential Benefits of Antibiotic Labelling Campaigns

We recently argued that the ability to visually identify medicine constitutes a cornerstone of responsible healthcare [7]. Evidence from countries in Africa and Asia suggest confusion among communities between antibiotics and other commonly used medicine. We stated that the lack of patient-friendly identification systems for medicine classes poses a major health concern that needs to be mitigated in both low- and high-income settings [7]. This issue is illustrated by the following quotes: ‘*When you talk about antibiotics, is Dolo – 650 [red. paracetamol, 650 mg] also one of them, it is a paracetamol right?*’ (Community member 3, woman, 25 years, India). Patients often rely on the visual characteristics of medications, including their color, markings, shape, or packaging, as a straightforward and instinctive means of communicating about their medicine with HCWs. This approach is frequently preferred by patients who find it challenging to read, comprehend, or recall the names of their medications, as illustrated by the following quotes: ‘*Those of us who are educated read and write and know stuff but those who are not educated cannot recognize antibiotic. To recognize this, we should give something which is understood by non-literate people like me [...]*’ (Focus group discussion 11, Community member, male, 28, Bangladesh); ‘*because I think most of the medicines we have right now, comes with the same packaging. So, maybe if there is a difference, people will understand the difference*’ (Community member 4, woman, 25 years, India). The lack of elements facilitating the identification of medication poses an obstacle to efficient communication among patients, suppliers, and HCWs regarding former and present medicine consumption. In turn, having a comprehensive grasp of prior and ongoing antibiotic usage and other medication use holds significance for both good clinical practices and antibiotic stewardship.

Furthermore, medicine labelling initiatives can serve as a valuable tool for public health campaigns. By incorporating health messages and warnings related to antibiotic misuse and resistance, labels and visual cues can reinforce broader public health messages. For instance, labels can inform patients about the adverse consequences of taking antibiotics without prescription or sharing antibiotics. This synergy between labelling initiatives and public health campaigns can lead to more effective outcomes to curb antibiotic resistance.

A.



B.



Figure 1: A. Example of antibiotic showing the red line on its packaging. Picture was taken in 2021 by Heber Bright in Vellore, India. B Example of antibiotic showing the red warning on its packaging. Picture taken by Adul Matin in 2023, Matlab, Bangladesh.

Potential Risks of Antibiotic Labelling Campaigns

Potential risks of antibiotic labelling campaigns should also be considered. Both countries decided to introduce a red colored visual feature. This choice was supported by interviewed participants as the color red is often considered a strong and attention-grabbing color. As one interviewee stated: *‘First of all, the color red grabs your attention for sure, so, the red box you would definitely see’* (Community member 1, woman, 23 years, India); Another participant noted *‘You have a red box, it is a proper warning, and the color is also red, danger color.’*

(Pharmacist 1, man, 28 years, India). In Bangladesh, a medicine supplier mentioned *‘when the medicine looks different, then it attracts people’s attention easily’*. (Drug seller 24, Man, 34 years, Bangladesh) and a community member shared the following *‘using red symbols on it [=packaging] will be more effective for people understanding about it [=antibiotics]’* (Focus group 1, Community member, woman, 27 years, Bangladesh). However, a potential risk is that antibiotics could become associated with something toxic and dangerous, leading to reluctance in taking them even when use is considered appropriate. Indeed, in India, bright red labelling is also being used for pesticides classified as *‘extremely dangerous’* [8].

Interestingly, the visibility of the red warnings was hindered by the common practice of dispensing medicines without their primary packaging, often in the form of cut strips. This practice was previously described in LMICs. *‘Generally, most of the prescription medicines are sold as strips but you can also get them in smaller quantities by cutting the strips’* (Policy-maker 4, Man, 68 years, India); *‘I have a huge problem with the information that is given in the strips... Especially when you are using a strip, when you cut it, you also end up cutting a lot of information. You never really know what all is written on it and what it means because half of it is cut’* (Community member 5, woman, 23 years, India). Also, the visibility of the red warnings was suboptimal as some would perceive it as a mere design feature on the package *‘the red line was just like a design’* (Policy-maker 5, man, 37 year old, India); *‘If I am not made aware of the red line, I will just consider it a part of the design and nothing else’* (Community member 5, woman, 23 years, India).

To ensure impact, awareness and understanding of the campaign among the different target groups is essential. Mathew et al. previously reported very limited awareness about the red line campaign among both HCWs (7%; n=50 doctors, n=50 nurses, n=50 paramedical staff including pharmacists) and patients (0%, n=100 patients). These findings aligned with our qualitative findings (see Supplementary Materials). Altogether, these results suggest a lack of continuous promotion and education activities surrounding the introduction of the Red Line campaign.

Ultimately, it is crucial to recognize that addressing inappropriate antibiotic use is a multifaceted complex issue, and relying solely on the introduction of a physical feature on antibiotic packaging is not the complete solution [7,9]. Instead, labelling initiatives should be viewed as a supplementary strategy alongside a range of other initiatives aimed at promoting responsible antibiotic usage and safeguarding their effectiveness for the future. Initiatives should encompass strengthening current regulations, enhancing access to quality public healthcare, boosting health literacy, and implementing stewardship practices.

Recommendations for Ongoing and Future Labelling Campaigns

We strongly support medicine labelling campaigns to help ensure proper and safe medicine use. In addition, we recommend countries undertaking such campaigns to ensure appropriate implementation, monitoring and evaluation to measure the impact(s) of the labelling campaigns and adjust where needed. Labelling campaigns should be designed to account for common local medicine dispensing practices such as the sale of medicine at individual unit level without their original packaging. In addition to communities and HCWs, medicine suppliers (i.e., both formal or informal antibiotic suppliers, from pharmacists to street vendors) should be identified as key target groups for dissemination activities and active involvement with labelling initiatives as medicine stores are known to be a common source of information on antibiotics and other medicines [10]. Important outcomes to assess include successful identification of antibiotics among other commonly sold medicine, community level antibiotic consumption and also the economic impact of the campaign. We also invite countries to document and make information accessible as this would provide useful lessons for other countries and future labelling initiatives. Key information that should be reported for each labelling campaign is summarized in Table 1.

Table 1: Key information that should be reported for all medicine labelling campaigns.

Labelling design	How the labelling / physically appearance was feature designed and selected as well as information on the targeted location(s) (e.g., primary, secondary or tertiary medicine packaging or even individual dosage units). If conducted, data from cognitive testing to assess the effect of the design should be disclosed as well.
Multi-sector collaboration	How was effective multi-stakeholder collaboration achieved (i.e., governments, policymakers, regulators, manufacturers, medicine suppliers, patient advocacy and consumer groups, and HCWs) and how was buy-in ensured?
Implementation	How was the campaign implemented? What type of interventions were undertaken and what type of dissemination materials were used to raise awareness among different target groups? What measures were undertaken to ensure sustainability of the implementation?
Assessment of impact	How was the monitoring and evaluation of the impact(s) of the campaign conducted? What outcomes were assessed and measured?
Public health campaign	How was the campaign aligned and integrated with existing national or regional public health/ medicine use campaigns including national action plans on antimicrobial resistance?
Major bottlenecks and facilitators	What important challenges and opportunities were faced and how these were leveraged?

Conclusion

Recognizing and distinguishing medicine, both in appearance and packaging, is fundamental to ensure proper and safe use. Therefore, medicine labelling initiatives hold immense potential for improving health literacy, patient involvement, and the impact of public health campaigns. Improving the identification of antibiotics and other medicines through labelling initiatives should be seen as a complementary strategy alongside many other efforts to improve responsible antibiotic use, and thereby preserve their future effectiveness. The experiences of India and Bangladesh offer valuable lessons for other countries and regions considering or implementing medicine labelling initiatives. It is hoped that our recommendations to harness the full potential of the ongoing labelling initiatives greatly benefit global public health.

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Author Contribution

All authors were involved in the conception and design, or analysis and interpretation of the data; the drafting of the paper, revising it critically for intellectual content; and the final approval of the version to be published; and all authors agree to be accountable for all aspects of the work.

Conflict of Interest

The authors declared no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author, upon reasonable request.

Supplementary Materials

1. Brief description of qualitative data

-Data collection in India: Semi-structured individual interviews with n=5 public members, n=5 pharmacists; n=5 policymakers. Purposive sampling was applied for recruitment of participants. Online interviews (in view of SARS-Cov2 restrictions) were conducted in English, audio recorded and transcribed. Thematic analysis was applied on the transcripts. Interviews were held between May and August 2021.

-Data collection in Bangladesh: Eighteen focus groups discussion with community members (n=62 men, n=83 women) and 31 semi-structured interviews with local drug sellers in Matlab, Bangladesh. Data collection was conducted between September 2021 and December 2022.

Ethics/Approvals

-Data collection in India: Permission was granted by the Institutional Review Board (Ethics Committee) of the Christian Medical College, Vellore, India, to conduct the project 'Experiences of the general public, pharmacists and policymakers with the Red Line Campaign and the identification of prescription only

medicine' in May 2021. (IRB Min. No. 13979). All participants were asked for electronic written consent to take part in the study.

-Data collection in Bangladesh: Approval was obtained from both the Research Review Committee (RRC) and the Ethical Review Committee (ERC) of the International Centre for Diarrheal Disease Research, Bangladesh (ICDDR, b), to initiate the project titled "Evaluating the Impact of Identifying Oral Antibiotics on Appropriate Community-Based Antibiotic Usage in Low- and Middle-Income Countries" in September 2011 (Project ID: PR-21088, categorized as a Minimal Risk Project). All potential participants were requested to provide their informed and signed consent before participating in the study.

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