



Use of the Narcotics Information Management System (NIMS) Data for Regulatory Science: Focusing on Methylphenidate Prescription

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RWD176



KEYWORDS

Attention-Deficit Hyperactivity Disorder; Methylphenidate; Narcotics Information Management System; Real-world data

BACKGROUND

- Attention-Deficit Hyperactivity Disorder (ADHD) is a frequent psychiatric disease in the pediatric group and Methylphenidate (MPH) is the most prescribed medication for ADHD.
- As a central nervous system stimulant, it increases attention and decreases restlessness in overactive children and adults.
- However, misuse and abuse of MPH can lead to potential psychological dependence, nervousness, irritability, and hallucination.

Licensed MPH list in South Korea (2023)	
Dosage Formulation	Dosage (mg)
Immediate-Release MPH (IR MPH)	5, 10
Extended-Release MPH (ER MPH)	5, 10, 20, 30, 40
	10, 30, 50, 60
Osmotic-Controlled Release Oral Delivery System MPH (OROS MPH)	10, 20, 30
	18, 27, 36, 54

- Since 2020, the Korea Institute of Drug Safety & Risk Management - Narcotics Information Management System (NIMS) has provided nationwide real-world data (RWD) of MPH.
- Despite the concerns of misuse and abuse of MPH, there is a paucity of studies to investigate the trends and patterns of MPH using data including both unpaid and paid use.

OBJECTIVES

- Since methylphenidate (MPH), an ADHD treatment is highly likely to be misused or abused due to concentration enhancement, diet, or addiction, strict regulatory management is required.
- We aimed to confirm the national MPH regulatory status in South Korea by analyzing all prescriptions unrelated to whether drug reimbursement, the number of disposal/discards, and prescription trends.

CONFLICT OF INTEREST

- All authors declare that they have no conflicts of interest.

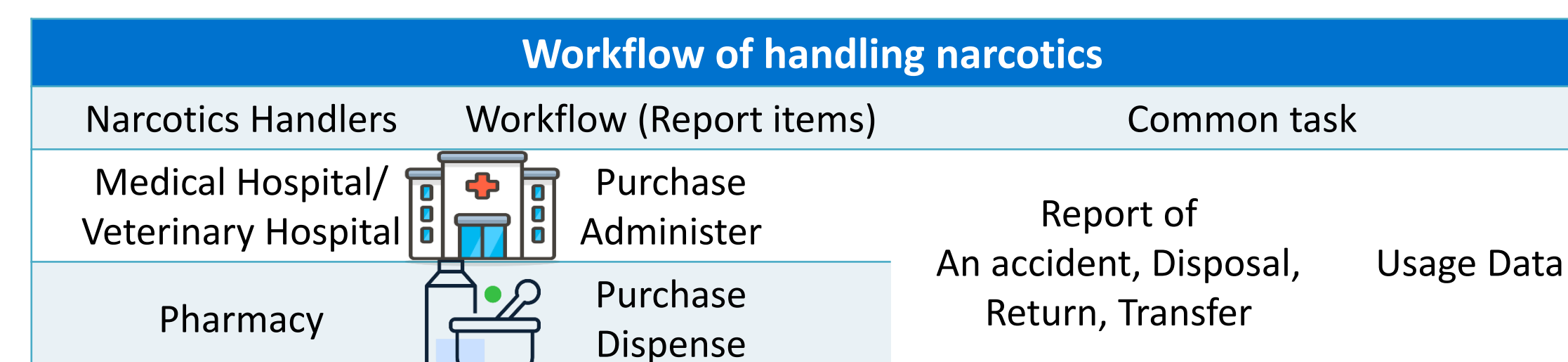
ACKNOWLEDGEMENTS

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METHODS

Introduction of NIMS Data



Characteristics of NIMS data

- A sustainable monitoring system that tracks overall handling information of narcotics and psychotropic drugs from manufacturers to end-users (i.e. import, manufacture, sell, transfer, purchase, compound, administer)
- Based on the reported data during dispensing/administration at hospitals and pharmacies
- Including total use of narcotics in Korea
- De-identified data

Variables: Usage data and Drug information data

- Date of dispensing/administration (up to a year), Ingredient of the drug, Type of healthcare institution, Patient information

Data related to the use of MPH from NIMS Data

- Prescription records: 2020. 01. 01 – 2021. 12. 31
- Usage report date: 2019. 01.01 – 2022. 01. 31
- Type of data: Usage data set (one of the four types of NIMS Data)
- Total number of cases: 36,658 for each year (grouped data)

Descriptive
Analysis

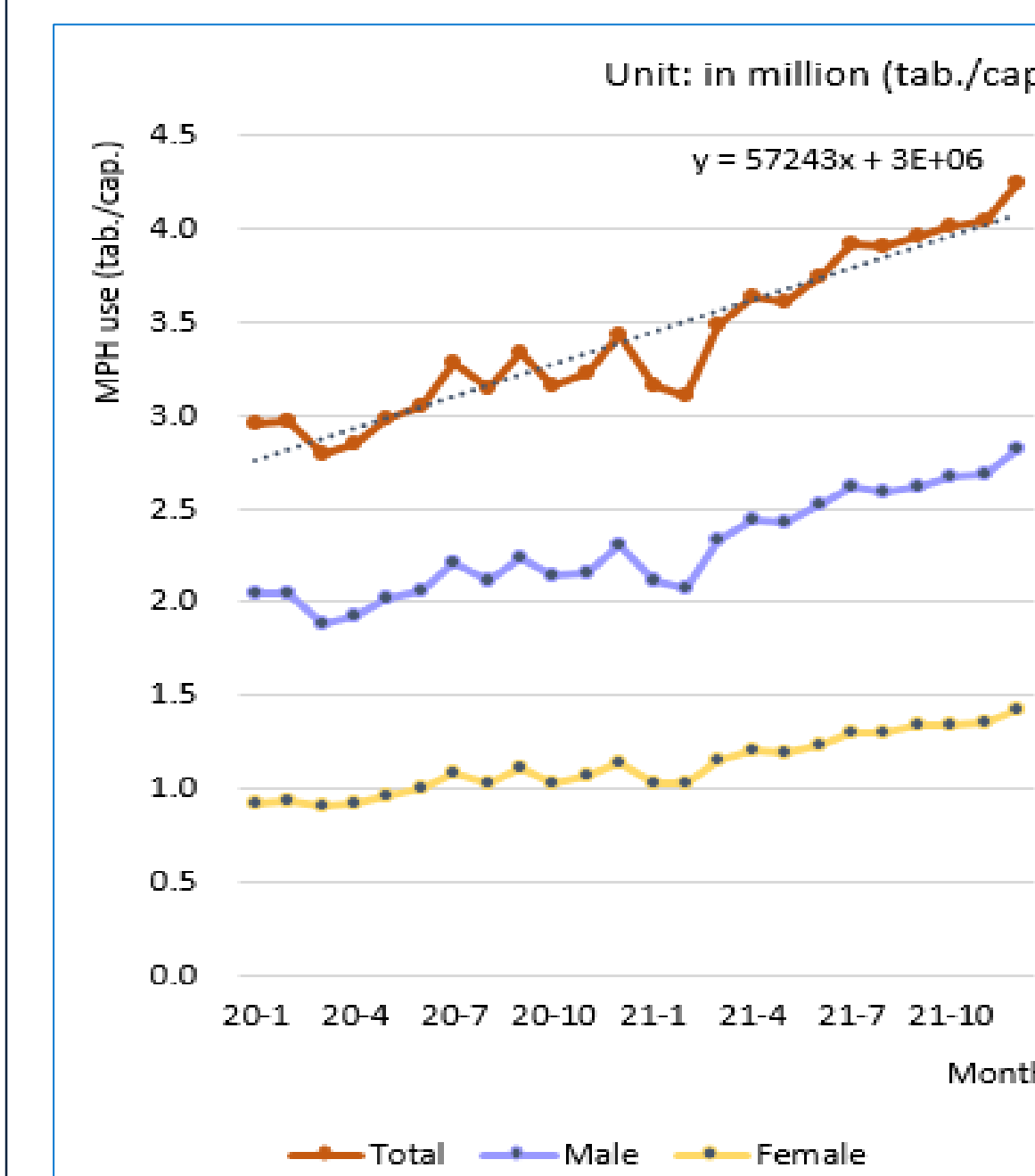
Using variables

Usage Data		
Information of User (Patients)		
Prescribed date	Sex (Male/Female)	Age group
Type of healthcare institution	Region of healthcare institution	
Drug Information Data		
Total Usage	Unit of usage (i) Capsule (cap.): ER-MPH, (ii) Tablet (tab.): IR/OROS-MPH	
The number of disposal/discards		

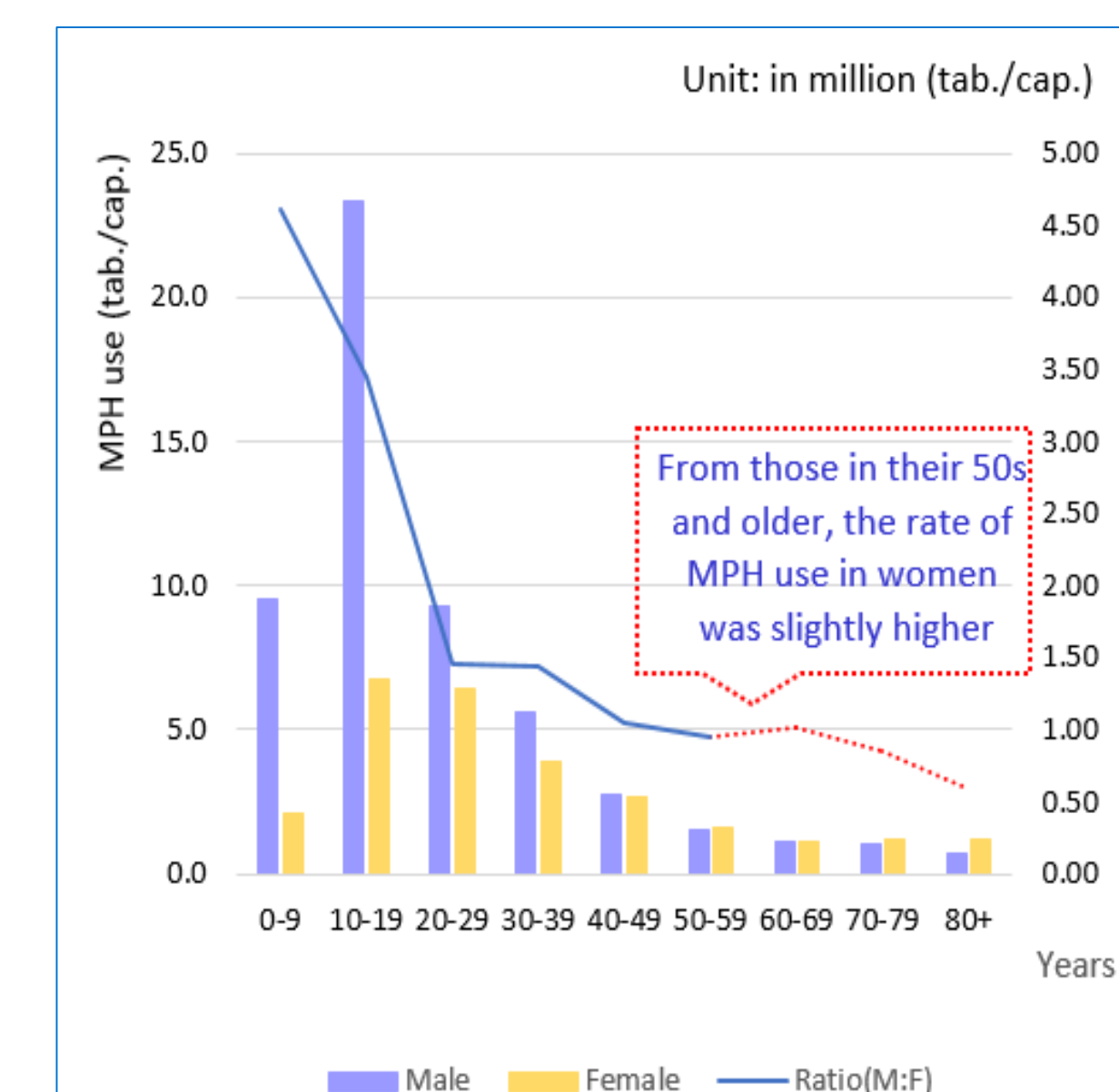
- IRB No. 202209-HB-EX-001 (Ajou University)

RESULTS

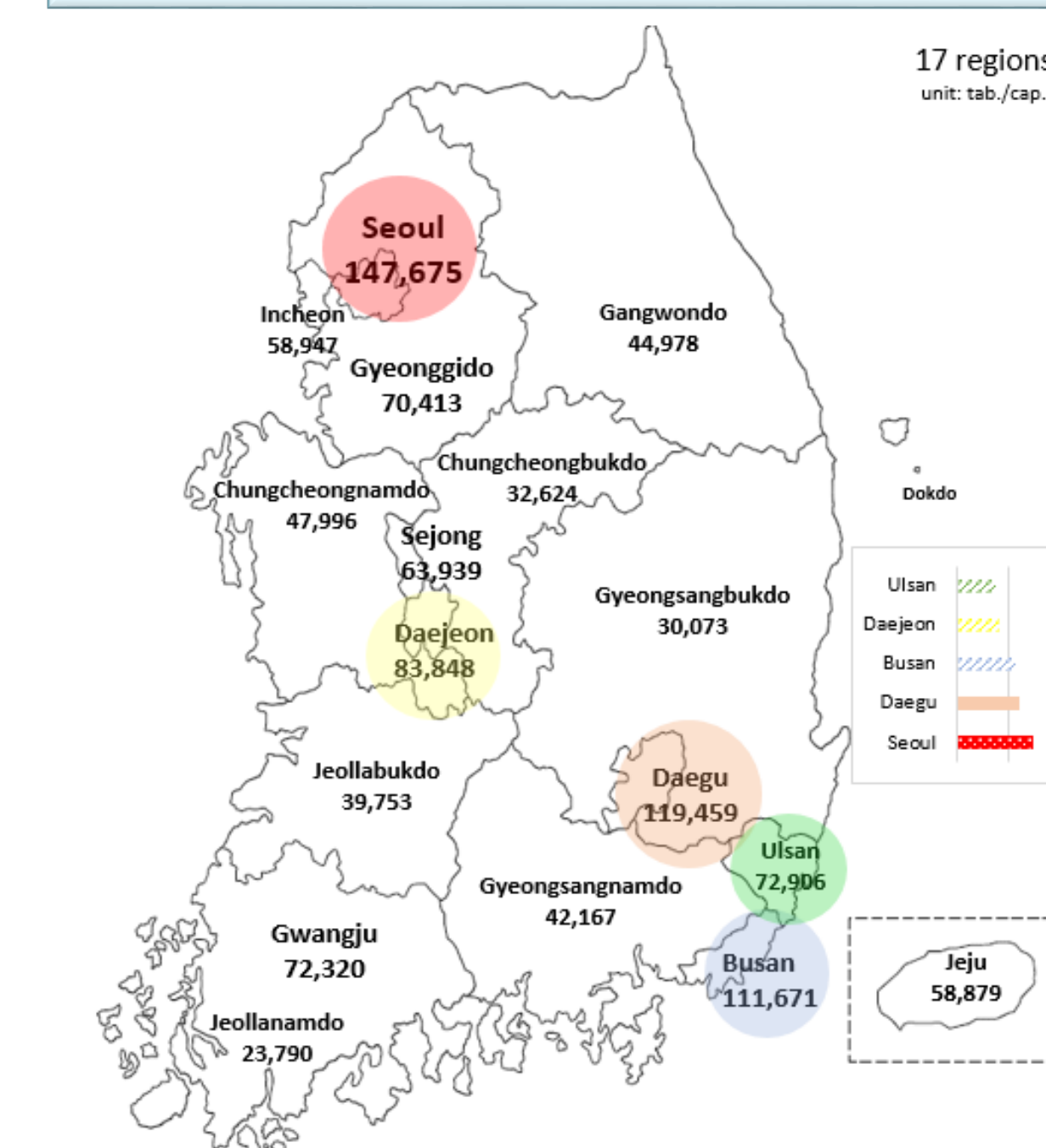
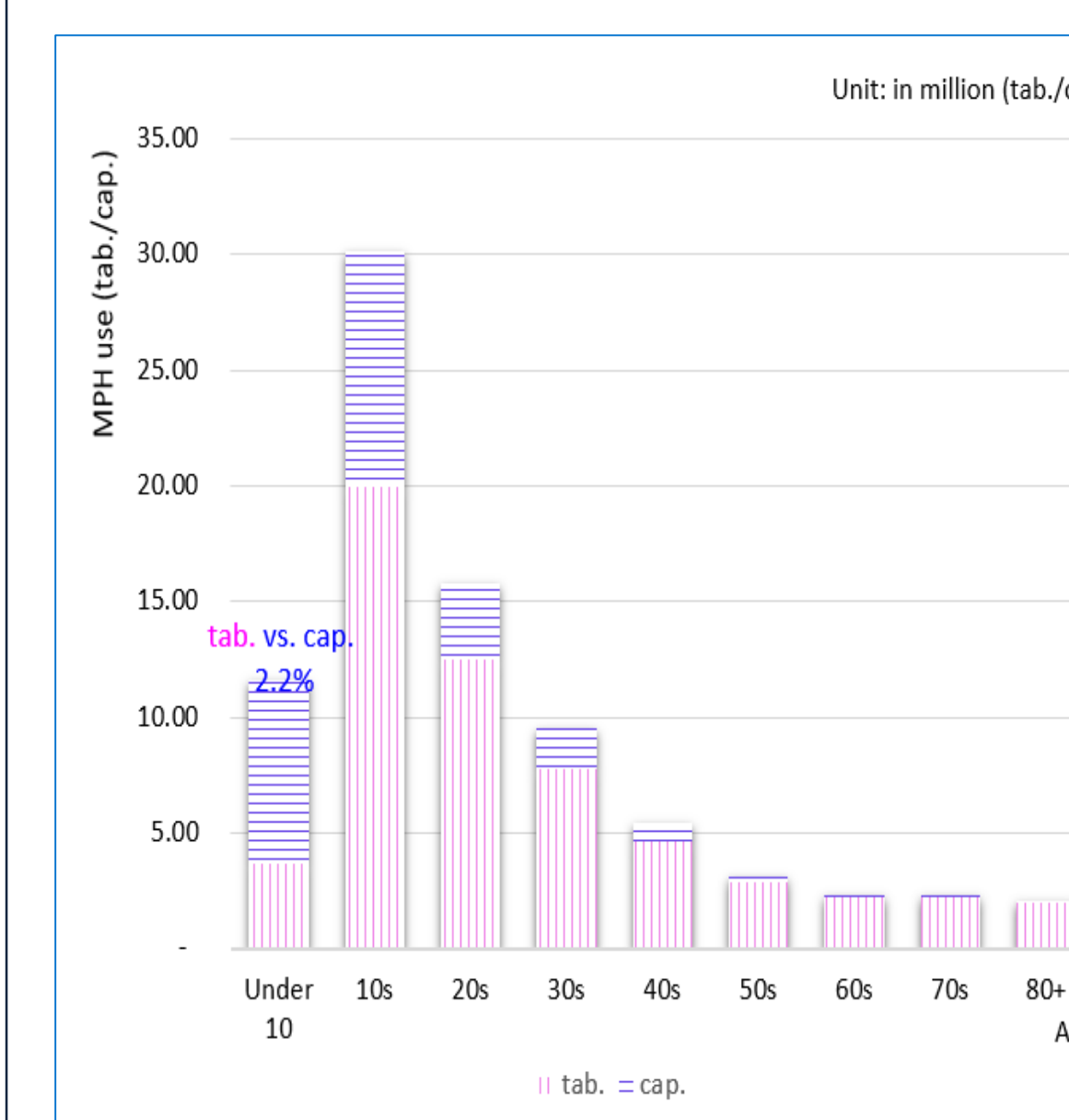
Trends in MPH use between 2020 - 2021



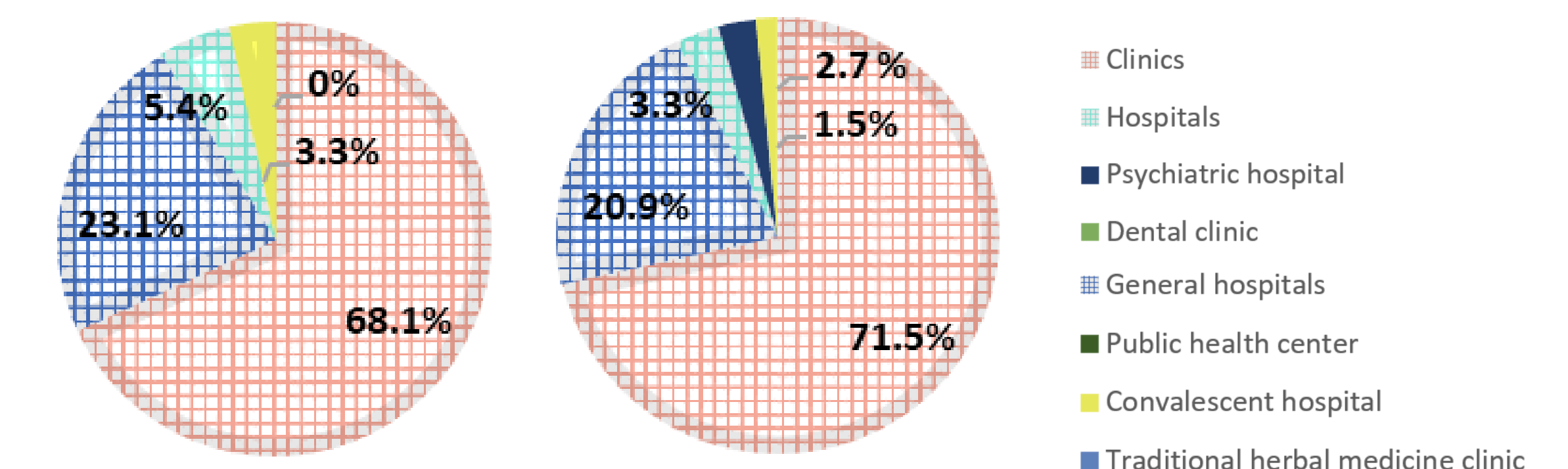
MPH use by Sex and Age group



MPH Use per 100,000 residents in South Korea's 17 Cities and Provinces (2020 - 2021)



MPH Prescription Patterns by Healthcare Institutions



MPH Use (tab./cap.)	2020	2021	2020 - 2021	Rate of increase compared to 2020
Use	37,187,350	44,812,136	81,999,486	20.5%
Discards	726	6,516	7,241	797.9%
Net usage	37,186,624	44,805,620	81,992,244	20.5%

- The MPH net usage over the past two years was 81,992,244.4ea, and the discards were 7,241.4ea.
- Men were prescribed twice as many MPH as women (66.8% vs. 33.2%), and it was the most prescribed in clinics (70.0%) and 10s (36.7%).
- The use of teenage boys was high (42.4%), and women were in their teens and 20s. Under 10, ER-MPH was 2.2 times more prescribed than that of IR/OROS-MPH combined, and the prescribed ratio of IR/OROS-MPH to IR-MPH increased rapidly as the age increased.
- Compared to 2020, the MPH net usage increased (20.5%); markedly, the discards increased by 797.9% in 2021.
- Additionally, prescriptions increased the most in clinics (88.3%), but the increase rate was the highest in public health centers (55.1%). Existing Psychiatric hospitals belonged to hospitals and Convalescent hospitals, but from March 2021, they were classified into new healthcare institutions, which could be confirmed.
- The city with the most MPH usage in two years was Seoul, the capital of South Korea.

CONCLUSION

- This study revealed that MPH usage was nationally well-regulated from prescription to disposal from the recent entire MPH usage data.
- Future research is needed from a long-term regulatory perspective by linking real-world medical data and NIMS data.