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5

6 **Background**

7 According to the World Health Organization (WHO) global estimates published in 2004,
8 more than half of all medication is prescribed, dispensed or sold inappropriately with a
9 resultant “*wastage of scarce resources and widespread health hazards*”.¹ Medication
10 wastage continues to be of paramount importance to public health in terms of safety, the
11 environment and the economy. A systematic review of the literature identified 42 published
12 papers, all employing a quantitative cross-sectional design. The main factors contributing to
13 wastage were ‘change in medication’, ‘patient's death’, ‘resolution of patient's condition’ and
14 ‘medication passed expiry date’. There was a clear absence of qualitative research exploring
15 wastage from the perspectives of key stakeholders (members of the public, patients,
16 healthcare professionals [HCPs] and policy makers), with no studies founded on behavioural
17 theories.²

18

19 There is an urgent need to develop, implement and sustain wastage reduction strategies. Such
20 interventions are likely to be complex, defined by the United Kingdom Medical Research
21 Council (MRC) as “*interventions with several interacting components*”.³ The MRC
22 highlights several stages for development and evaluation of complex interventions,
23 emphasising the need for a good theoretical understanding of how an intervention could bring
24 about change. Developing processes which include behaviour change theories impacts
25 significantly the positive implementation of evidence into healthcare practice.

26

27 **Aim**

28 The aims of this research were to describe and understand the beliefs and behaviours
29 regarding medication wastage of the Maltese public and HCPs and to explore potential
30 solutions.

31

32 **Ethical approval**

33 The study was approved by the School of Pharmacy and Life Sciences Research Ethics
34 Committee, Robert Gordon University and the University of Malta Research Ethics
35 Committee.

36

37 **Method**

38 *Design*

39 This was an interpretative study based on a theoretical basis using focus groups of
40 participants.

41

42 *Setting*

43 This study was conducted in Malta, an island in the middle of the Mediterranean sea with a
44 population of 416,110.⁴ The healthcare system in Malta is based mainly on taxation with a
45 centrally organized health service provided mainly by public health providers.⁵ Medication in
46 Malta is either purchased by the patient or supplied to the patient free of charge by the
47 government, based on entitlement criteria.

48

49 *Inclusion criteria, sampling and sample size*

50 As part of a related study 1,920 randomly selected members of the general public and 1,680
51 HCPs (all dentists, doctors and pharmacists) were invited to complete a questionnaire on
52 medication wastage.⁶ As part of this mailing, they were invited to participate in a focus group
53 study. Those interested were requested to complete and return an 'expression of interest
54 form' indicating the most preferred time of the day to attend. Only the data from the focus
55 groups is included in this manuscript.

56

57 Five focus groups each containing six participants were planned, three with HCPs and two
58 for the general public. Purposive sampling was used to select participants of different ages,
59 gender and education levels (public); and HCP professions.

60

61 *Topic guide development*

62 The topic guide was based on the key findings from the questionnaire study⁶ and the 14
63 domains of the Theoretical Domains Framework (TDF). The topic guides for HCPs and
64 general public were similar; the public one also translated into Maltese. The use of a
65 theoretical basis, the TDF and associated domains were used to aid the construction of the
66 topic guide and coding framework, to ensure that the research and outputs were grounded in a
67 behavioural theory which focuses on change.

68

69 *TDF* The TDF was developed by psychological theorists, health psychologists and
70 researchers to simplify and integrate 33 theories and 128 into a 12 stage TDF (now extended
71 to 14) of: knowledge; skills; social/professional role and identity; beliefs about capabilities;
72 optimism; beliefs about consequences; reinforcement; intentions; goals; memory, attention
73 and decision processes; environmental context and resources; social influences; emotion;

74 behavioural regulation.⁷ TDF has been used in several studies to explain implementation
75 problems and inform implementation interventions.^{8,9,10}

76

77 *Focus group process*

78 The focus groups were of approximately 90 minutes duration, were conducted by the
79 principal researcher in a conference room of a centrally located hotel, audiorecorded and
80 transcribed verbatim, with Maltese statements translated into English.

81

82 *Main outcome measures*

83 Beliefs and behaviours regarding medication wastage and potential solutions to reduce
84 medication wastage.

85

86 *Data analysis*

87 Analysis was carried out using the framework approach,¹¹ with the coding frame developed
88 and applied independently by two researchers to promote confirmability, and mapped to TDF
89 domains.

90

91 **Results**

92 *Participant demographics*

93 Tables 1 and 2 provide a description of the participants' demographics.

94 *Insert Table 1 here.*

95 *Insert Table 2 here.*

96

97 *Key themes identified within TDF domains*

98 Key themes emerged from the focus groups, namely: practitioner effects, patient effects,
99 political effects and societal effects. An overlap of these four key themes was noticed when
100 mapped to the different TDF domains listed in the first column of Table 3. A wide range of
101 sub-themes emerged from these four key themes, with several of these sub-themes mapped to
102 one domain also aligned to other TDF domains, such as the healthcare system and medication
103 unavailability emerging under different domains.

104

105 *Insert Table 3 here.*

106

107 Behavioral regulation was the TDF domain which emerged most strongly with both HCPs
108 and members of the public. Implementation of solutions to minimise medication wastage
109 requires behavioural change. In terms of potential solutions to reduce wastage, these were
110 described under the domain of behavioural regulation in terms of facilitators to alter
111 behaviour; therefore the findings of the domain 'Behavioural regulation' will be presented
112 below.

113

114 *Domain: Behavioural regulation*

115 *1. Practitioner effects*

116 Several noted the need to engender a culture of accountability in HCPs,

117

118 *"... so if we are going to invest in an IT system and we are not going to make anybody*
119 *accountable for the cost, we are just going to spend money on an IT system".*

120 (Female, hospital pharmacist, part-time community pharmacist, 9 years in practice)

121

122 Medication use reviews (MURs) were discussed as a potential for HCPs and patients to
123 optimise medication and reduce wastage,

124

125 *"In the UK patients are even reviewed by the pharmacist, the MURs. And that has reduced a
126 great deal of costs for the NHS. Reviews are then every year for example".*

127 *(Male, hospital pharmacist, part-time-community pharmacist, 12 years in profession)*

128

129 A standardised patient review template was suggested, which would be mandatory and
130 updated regularly following patient assessment prior to prescribing,

131

132 *"...together with the prescription, every 6 months they have to show something given to the,
133 by the doctor, of what the examination found. Maybe the blood pressure, the treatment they
134 are on. Maybe every 6 months something is filled in as proof that the patient was examined".*

135 *(Female, hospital doctor, 4 years in profession)*

136

137 The nurse within the public focus group discussed prescribing guidelines,

138

139 *"More guidelines... if for example a patient is on certain medication, you can prescribe for
140 certain amount, for certain time".*

141 *(Male, Nurse, 34 years, post-graduate qualifications)*

142

143 while others stressed the need for better communication between the private and public health
144 sector and at all levels of the medication supply chain,

145

146 *"From the manufacturer, to the agent, to the wholesaler, to the pharmacy and eventually to*
147 *the patient. And between the pharmacy and the patient there is the doctor prescribing. Now if*
148 *there is more communication between each level, maybe on consumptions, prescribing*
149 *trends, etc., I think that wastage could be reduced at each level".*

150 *(Male, hospital pharmacist, part-time-community pharmacist, 12 years in profession)*

151

152 *2. Patient effects*

153 Participants described the patients' fear of unavailability of medication as a major obstacle to
154 their desire to reduce wastage, and thus the need for reassurance of medication availability. In
155 fact one of the pharmacists pointed out that patients explicitly expressed concerns,

156

157 *"We see it, I mean quite frequently, people you know, they just tell us outright 'cause I don't*
158 *really need this medication, I have at home you know. But will it be available the next time I*
159 *collect my medicines?' ...".*

160 *(Male, hospital pharmacist, 12 years in profession)*

161

162 A hospital pharmacist suggested that patient groups and organisations could support,
163 encourage and reassure patients around appropriate medication ordering and use,

164

165 *"And the coeliac association had created a system.... they had like a support group, they*
166 *could meet or there was a liaising person and you know that you could go there and maybe*
167 *they could spare you a packet of gluten free flour. And I used to feel that that system was a bit*
168 *of like a reassurance to those patients".*

169 *(Female, hospital pharmacist, part-time-community pharmacist, 13 years in profession)*

170

171 Patient empowerment, specifically the need to empower patients to improve non-adherence
172 was also discussed. Non-adherence leading to wastage was attributed to issues such as poor
173 education and adverse effects,

174

175 *"Yes because their education is low, so they won't take their medication properly".*

176 *(Female, hospital pharmacist, 24 years in profession)*

177

178 *"...I think patients get side effects from medicines and they decide to stop them because of
179 side effects in the initial period".*

180 *(Female, hospital pharmacist, 24 years in profession)*

181

182 3. Political effects

183 The need to reduce political interference in the organisation and delivery of health services,
184 assigning strategy and decision making to HCPs, was discussed at length. As a member of the
185 public commented,

186

187 *"... health is a sector that needs to be separated from politics. The administrative side of it is
188 one thing, the medical side of it is another thing, the regulating is another thing. So I think
189 the health sector needs to be separate. I don't know how it can be done; it needs to be
190 separated from the Government. If we need to get anywhere I mean".*

191 *(Female, Assistant Director, 32 years, post-graduate qualifications)*

192

193 However, numerous solutions to medication wastage that could be implemented by
194 politicians and policy makers, particularly in relation to the free healthcare system in Malta,

195 were discussed. HCPs and the public described the importance of stock management and
196 forecasting of medication requirements,

197

198 *"So we need to have a simple system which is continuously updated by the healthcare*
199 *professionals and even GPs who are seeing trends coming, at the general practice and even*
200 *at hospital, and this system is being updated by the doctors and even by professionals who*
201 *are reading papers about upcoming medicines... "*

202 *(Male, accountant, 24 years, post-graduate qualifications)*

203

204 Focusing attention around highly prevalent medical conditions when budgeting was
205 suggested,

206

207 *"We are talking about cardiovascular; it's a huge chunk of our budget, cardiovascular*
208 *medications and diabetes. I think if we are more selective in the medications we use in those*
209 *two groups; the cost savings will be quite significant".*

210 *(Female, hospital pharmacist, part-time-community pharmacist, 13 years in profession)*

211

212 A member of the public suggested the introduction by policy makers of a patient specific
213 pharmaceutical identity card containing all medication history for both privately purchased
214 medication and those obtained for free to prevent re-dispensing,

215

216 *"I thought if they had an ID card, sort of pharmaceutical ID with... what you've been*
217 *prescribed, on a chip... so that you can see what they've been prescribed previously as well*
218 *and even for repeat prescription abuse or over, you know people, over, stock piling. Because*
219 *you can see, look, they just came in and had this".*

220 *(Female, Director, 36 years, post-graduate qualifications)*

221

222 A number discussed the importance of good infrastructure, with one participant adding the
223 introduction of a centralised patient medication record,

224

225 *"One thing I was going to mention is that in the community there should be an IT system*
226 *where you, where if I go to a doctor and maybe next month I don't find my own doctor, and I*
227 *have to go to another doctor, then there should be a record".*

228 *(Female, hospital pharmacist, part-time-community pharmacist, 5 years in profession)*

229

230 Incentives by politicians for HCP to reduce wastage were suggested,

231

232 *"If not, there should be steps that are taken where if they don't want to take that*
233 *responsibility, there is no incentive, they need to be incentivised somehow".*

234 *(Female, Director, 36 years, post-graduate qualifications)*

235

236 A hospital pharmacist mentioned the need to regulate use of high consumption, low cost
237 medication which could result in a higher total cost compared to low consumption, high cost
238 medication,

239

240 *"When you mention high cost medication, we tend to go see one tablet, how much that costs.*
241 *But really when you have high consumption items their cost might actually be higher than the*
242 *high cost".*

243 *(Male, hospital pharmacist, 12 years in profession)*

244

245 The aim of disease prevention with resultant decrease in the need for medication was
246 discussed. The employment of, for example, more nutritionists in hospitals was suggested,

247

248 *"Because this is like a chain, 'cause if I am eating for my health, I will not get high*
249 *cholesterol... Even the Government would save a lot of money".*

250 *(Female, housewife, 56 years, secondary level of education)*

251

252 4. Societal effects

253 Making patients, HCPs, politicians and the society as a whole more aware of the cost of
254 medication, particularly those supplied free to the patient, was highlighted as a positive move
255 in regulating behaviour,

256

257 *"... but I think if we make people aware, especially politicians and doctors, how much it is. I*
258 *think there will be much more awareness, as money, as pills. I don't know the exact amount*
259 *... yes but especially politicians, I think they don't know the extent so they do not know if it is*
260 *a problem..."*.

261 *(Male, Nurse, 34 years, post-graduate qualifications)*

262

263 Several suggested more education on appropriate medication use, starting with the very
264 young and using different targeting strategies,

265

266 *"...for example if you need the youngsters, there is the social media, Facebook, Twitter,*
267 *everything, computer..."*.

268 *(Male, Nurse, 34 years, post-graduate qualifications)*

269

270 and settings such as as the workplace,

271

272 *"... so why shouldn't we educate people at the workplace?... You would tell me maybe not all*
273 *workers can attend. No, but we should try to do it even in their breaks, get someone who is*
274 *competent".*

275 *(Female, housewife, 56 years, secondary level of education)*

276

277 A medication education campaign amongst patients was also proposed as a measure to
278 regulate behaviour,

279

280 *"Launch a medication education campaign. You have to tell the patient that if they stop*
281 *wasting the medication... that money can go somewhere else which can end up helping*
282 *them".*

283 *(Female, hospital doctor, 17 years in profession)*

284

285 **Discussion**

286 *Key findings*

287 Four key themes (practitioner effects, patient effects, political effects and societal effects) and
288 a wide range of sub-themes were identified within the TDF domains. Focus groups conducted
289 with HCPs and the general public identified the following five key themes to address in
290 proposing solutions to minimise medication wastage under the behavioural regulation
291 domain: system effects; practitioner effects; patients effects; political effects; awareness and
292 educational effects.

293

294 *Strengths and weaknesses*

295 To our knowledge this is the first interpretative study providing a detailed description of
296 behaviours around medication wastage, with attention paid to solutions and facilitators of
297 behavioural change. The use of a theoretical basis ensured that the research and outputs were
298 grounded in behavioural theories of change.

299

300 However, there are limitations to the research and the data generated. Despite employing
301 purposive sampling, a wider range of participants, such as unemployed or less educated
302 members of the general public, and nurses may have impacted the findings. While it is
303 possible that data saturation was not achieved, a number of important themes and potential
304 solutions were identified.

305

306 *Interpretation of study findings*

307 This study confirms the usefulness of the TDF and has provided valuable in-depth description
308 and understanding of a number of behaviours which may lead to medication wastage and in
309 doing so act as barriers or hindrances to all stakeholders striving to reduce wastage.

310 Implementation of interventions requires behavioural change and the success of
311 implementing proposed solutions to reduce medication wastage relies on the scrutiny of
312 barriers and facilitators of the behavior to be changed. There are multiple theories of
313 behaviour change and overlapping constructs which present a challenge on which theory
314 should be adopted in research. The TDF was applied in this research since it includes
315 constructs from 33 behaviour change theories. Moreover, the TDF was used as it is an
316 integrative framework that allows for the systematic and comprehensive identification of
317 barriers to change, supports identification of target behaviors for change and informs
318 implementation strategies of proposed interventions.¹² Overlap in the four key themes in line
319 with the different TDF domains in this research demonstrates the importance of these four

320 major components and development of strategies for change should be targeted from the
321 perspective of each of these components.

322

323 The Maltese (or any) free healthcare system as a possible major barrier to medication wastage
324 reduction was a recurring sub-theme in this study and thus needs to be further looked into.

325 There is some evidence (albeit limited) that those patients entitled to free medication are
326 more likely to receive polypharmacy, traditionally defined as “*the concurrent use of five or*
327 *more medications*”.¹⁴ Whilst providing free medication could be viewed as a positive step in
328 terms of patient equality of care, there is a need to research the impact of no charge on patient
329 request for and use of prescribed medication. It could be hypothesised that patients receiving
330 free medication are more prone to wastage. Hence the effects of the free healthcare system
331 need to be fully explored and recognised to fully inform policy debates.¹³ Moreover, the
332 perspectives of participants in this study on disease prevention should also be considered as a
333 means of saving on limited resources, including HCPs’ time and healthcare expenditures.
334 Notably, the EU Commission staff working document ‘Investing in Health’ very recently
335 reported that only approximately three percent of the current health expenditure is earmarked
336 for public health and prevention programmes amongst Member States.¹⁴

337

338 Both from practitioner and patient perspectives, medication shortages was discussed in depth
339 during the focus groups as a key cause of unnecessary hoarding and stocking by patients and
340 also recommended to patients at times by HCPs. Medication shortages are a global problem
341 with all medication classes being affected^{15,16} and have been described for more than a
342 decade.¹⁷ This issue has also been recognised as causing great distress to patients, their carers
343 and families.¹⁵ There are many and complex reasons for medication shortages including
344 manufacturing quality problems, the increased demand of medication and changes in

345 regulatory standards of manufacturing plants, amongst others.¹⁸ Following a reflection paper
346 on the issue of medication shortages by the European Medicines Agency (EMA), the
347 European Association of Hospital Pharmacists (EAHP)¹⁵ issued a number of
348 recommendations. One key recommendation is the collaborative involvement of patients'
349 organisations, using their expertise to issue guidelines for patients and HCPs to promote
350 rationale medication use. Interestingly focus group participants were in accord with this
351 recommendation, proposing one solution involving collaboration with patient groups to
352 provide guidance, support and reassurance.

353

354 Medication non-adherence was discussed at length during the focus groups and was
355 considered to be one of the key barriers hindering resolution of medication wastage.
356 Furthermore, medication non-adherence can lead to leftover unused medication in households
357 which can be later used for an inappropriate indication or may expire and hence pose a public
358 health issue, including environmental implications through improper disposal. A very recent
359 review of 51 systematic reviews of the determinants of adherence identified 771 individual
360 factors for non-adherence to medicines for chronic conditions. These factors were grouped
361 into eight clusters, two of which were the patients (key issue in the elderly) and the medicine
362 (key issue with polypharmacy).¹⁹ While this research does not focus exclusively on non-
363 adherence, future research should pay attention to these factors could positively impact
364 medication wastage.

365

366 The lack of awareness and the existence of knowledge gaps in relation to medication wastage
367 both amongst the public and HCPs emerged in focus group discussions. Future research
368 aiming at the knowledge-behaviour gap through different programs designed to educate
369 different age groups and different stakeholders was considered as the main goal to reduce

370 medication wastage. However, this knowledge-behaviour gap cannot be seen as a standalone
371 barrier in the issue of medication wastage but has to be seen in the context of all the other
372 factors elicited by participants, such as psychological factors in terms of fear of medication
373 unavailability.

374

375 Political interference contributing to wastage and as a potential barrier to implementing
376 wastage reduction strategies was discussed in all groups and by almost all participants.
377 Undermining of HCPs and scientific experts by political influence has been described
378 elsewhere.^{20,21} In a commentary, Rest and Halpern argue that public policy decisions need to
379 be informed by independent scientists rather than through political interference if one wants
380 to ensure a good government and a functioning democracy.²² Pham *et al.* describe the
381 importance of segregating ‘macro-level decisions’ generated at a political debate level from
382 ‘micro-level decisions’.²³ This is in line with participants’ suggestions around the need to
383 redefine political will.

384

385 A comprehensive description of strategies to potentially reduce wastage was elicited. These
386 will require intervention at macro-contextual levels, meso-transactional level and at the
387 micro-organisational level. Recommended interventions and policies to change behaviour
388 within this study fit well with the ‘Behaviour Change Wheel’, which promotes uptake and
389 optimal use of strategies.²⁴ Implementation of any of these strategies is likely to be an
390 iterative process, especially since each and every strategy merits further consideration which
391 will generate its own multifaceted challenges. Nonetheless, implementation of some
392 strategies might not be as simple or straightforward as one might think. In a study employing
393 photo-elicitation to identify different types of wastage, Goff *et al.* stated that whilst
394 attempting to reduce medication wastage one needs to be careful so as not to generate other

395 forms of wastage, such as the time and money invested in implementing a specific
396 intervention which may not always outweigh the benefits of introducing the intervention.²⁵

397

398 *Future research*

399 One of the benefits of this research is the linkage to practice developments. While there are
400 many future research areas and questions which emerge from this research, there are key
401 priority areas which need to be targeted: the effect of policy implementation on practice from
402 the HCP perspective; effects of education on different age groups and stakeholders; and the
403 overall impact of the interventions discussed within this paper on medication wastage.

404

405 **Conclusion**

406 This study has employed a theoretical framework to identify key underlying medication
407 wastage related behaviours (such as system, practitioner and patient effects) which require
408 attention as part of strategic development.

409

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412

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416

417 **Conflict of interest**

418 The authors declare no conflict of interest. This study formed part of the author's submission
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420 interpretation or writing of this article.

421

422

423

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494

495

496

497

498

499 Table 1: HCP demographics

Participant	Age	Sex	Profession	Years in profession	Main role	Other experience
1	47	F	Pharmacist	24	Hospital pharmacist	
2	23	M	Pharmacist	1	Hospital pharmacist	Community pharmacist
3	31	M	Pharmacist	8	Community pharmacist	
4	35	M	Pharmacist	12	Hospital pharmacist	Community pharmacist
5	28	M	Doctor	5	Hospital doctor	
6	38	M	Pharmacist	15	Hospital pharmacist	Medical representative

7	32	M	Pharmacist	9	Responsible person/regulatory affairs pharmacist	
8	27	F	Doctor	4	Hospital doctor	
9	28	F	Pharmacist	5	Hospital pharmacist	Community pharmacist
10	43	F	Doctor	20	Hospital doctor	
11	35	M	Pharmacist	12	Hospital pharmacist	
12	32	F	Pharmacist	9	Hospital pharmacist	Community pharmacist
13	36	F	Pharmacist	13	Hospital pharmacist	Community pharmacist
14	26	M	Doctor	4	Hospital doctor	
15	38	F	Doctor	17	Hospital doctor	
16	26	M	Doctor	4	Hospital doctor	
17	26	F	Pharmacist	3	Hospital pharmacist	Community pharmacist

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518 Table 2: General public demographics

Participant	Age	Gender	Profession	Level of education
1	34	M	PhD Nursing	Postgraduate
2	24	M	Accountant	Postgraduate
3	36	F	Director	Postgraduate
4	32	F	Assistant director	Postgraduate
5	63	F	Housewife	Primary
6	56	F	Housewife	Secondary

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535 Table 3: Key themes and sub-themes mapped to TDF domains

Theoretical Domain	Key themes (sub-themes)
Knowledge	1. Practitioner effects (knowledge of the consequences of medication wastage on economy, staff resources)
Skills	1. Practitioner effects (ability of practitioners) 2. Patient effects (non-adherence to medication by patients)
Beliefs about capabilities and their social/professional role and identity	1. Practitioner effects (HCPs as educators, time constraints, overstocking of medication by HCPs) 2. Political effects (failing system) 3. Societal effects (social influences - global force)
Optimism	1. Practitioner effects (psychological influences - stress, obsessed, discouraged, optimistic)
Beliefs about consequences	1. Practitioner effects (consequences of medication unavailability to treat their patients)

	<ol style="list-style-type: none"> 2. Patient effects (consequences of medication unavailability for patients' conditions, patients' unawareness of consequences of unused returned medication) 3. Political effects (financial consequences of inappropriate prescribing/dispensing on country and tax payer)
Reinforcement	<ol style="list-style-type: none"> 1. Practitioner effects (HCP incentive - uphill battle, professionalism)
Intentions	<ol style="list-style-type: none"> 1. Political effects (the free healthcare system, unclear goals within the Government health system)
Environmental context and resources	<ol style="list-style-type: none"> 1. Practitioner effects (lack of patient review, lack of patient information, multiple prescribers, lack of patient registration, lack of treatment management guidelines) 2. Patient effects (selfish practices, confrontation, vulnerability) 3. Political effects (lack of resources, lack of harmonisation) 4. Societal effects (lack of education amongst certain social classes, abuse of free healthcare system)
Social influences	<ol style="list-style-type: none"> 1. Practitioner effects (mentality, communication, power, pressure by work colleagues, pharmaceutical lobbying) 2. Patient effects (pressure of HCPs by patients to prescribe or dispense)
Emotion	<ol style="list-style-type: none"> 1. Practitioner and patient effects (fear of medication unavailability)
Behavioural regulation	<ol style="list-style-type: none"> 1. Practitioner effects (correct prescribing and accountability, medication use reviews, improved documentation, improved communication)

Goals

2. Patients effects (increase patient reassurance, patient empowerment)
3. Political effects (reduce political interference, stock management, budgeting, independent body governing free healthcare system, pharmaceutical identity card, infrastructure, incentives, medication fee, reimbursement, compulsory private insurance, medication take-back scheme with cash card, high consumption medications, disease prevention)
4. Societal effects (increase awareness, strategies and settings to deliver education)
1. Practitioner effects, patients effects, political effects and societal effects (need for education of all stakeholders including HCPs and patients)

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