

Socioeconomic and behavioural factors associated with access to and use of patient Electronic Health Records: a cross-sectional analysis of four European countries.

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Research

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1 Socioeconomic and behavioural factors associated with access to and use of
2 patient Electronic Health Records: a cross-sectional analysis of four European
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40 **Abstract:**
41
42 (350 Words)
43

44 **Background:** Access to and use of digital technology are more common among people of
45 higher socioeconomic status. These differences might be due to a lack of interest, not
46 having physical access or having lower intentions to use this technology. By integrating the
47 digital divide approach and the User Acceptance of Information Technology (UTAUT) model,
48 this study aims to further our understanding of socioeconomic factors and the mechanisms
49 linked to different stages in the use of individuals' electronic health records (EHR):
50 motivations, intentions and physical access to patients EHR.

51 **Methods:** A cross-sectional online and in-person survey was undertaken in the areas of
52 Lorraine (France), Luxembourg, Rhineland-Palatinate and Saarland (Germany), and Wallonia
53 (Belgium). First, exploratory factor analysis was performed to group items derived from the
54 UTAUT model. Next, we applied linear and logistic regressions controlling for country-level
55 heterogeneity, health and sociodemographic factors.

56 **Results:** A total of 829 individuals aged over 18 completed the questionnaire. We found
57 evidence of socioeconomic inequalities in the access to and use of EHR. Education and
58 income played a significant role in individual's desire to access their EHR. Being older than
59 65 years, and migrant, were negatively related to the desire to access EHR. An income
60 gradient was found in having a physical access to EHR, while for the subgroup of
61 respondents who expressed desire to have access, higher educational level was positively
62 associated with intentions to regularly use EHR. In fully adjusted model testing the
63 contribution of UTAUT-derived factors, individuals who perceived EHRs to be useful and had

64 the necessary digital skills were more inclined to use their EHR regularly. Social support and
65 lack of anxiety in using technology were strong predictors of regular use of EHR.

66 **Conclusion:** The findings highlight the importance of considering all stages in the use of EHR
67 (desire, physical access, and regular use), while paying special attention to migrants and
68 people with lower socioeconomic backgrounds who may not be able to exploit the potential
69 of EHRs. As EHR use is expected to come with health benefits, facilitating access and regular
70 use for those less inclined could lead to increases in health equity.

71 **Background**

72

73 Personal Electronic Health Records (EHR) have been championed as a way to improve the
74 access, delivery and the quality of health care services. They are defined as “real-time,
75 patient-centred records that provide immediate and secure information to authorized
76 users” (1). EHRs are expected to play an increasingly important role in empowering patients
77 by facilitating better health information exchange between patients and health
78 professionals, and in turn enabling patients to be proactive and engage more effectively as
79 partners in their care (2). It has been noted that the provision of EHRs will further help with
80 self-care, facilitate the better coordination of healthcare services and improve health
81 outcomes (3,4). In this context, the European Commission supports the adoption of EHR
82 within and between its member states, with a strong emphasis on the safety and the
83 security of patients’ health data. To date, most countries within the European Union, with
84 the exception of Germany, have developed and to some extent implemented EHRs (1).

85

86 However, even though individuals have physical access to the electronic health portals and
87 their EHRs, the uptake among certain socioeconomic and migrant populations has been
88 rather slow and socially patterned (5–8). Health inequalities might thus be worsened by the
89 fact that technologies that facilitate self-management and patient engagement are used
90 more frequently by those who are already healthier and more socioeconomically
91 advantaged (9,10). To date, EHRs have been studied through two different approaches. On
92 one side, scholars are concerned with the digital divide, examining disparities in the use of
93 digital technology across different groups (11–14). On the other side, research concerned
94 with the use of digital technologies is rooted in the Unified Theory of Acceptance and Use of
95 Technology (UTAUT) approach, predominantly used in the field of social psychology and
96 which explores the individual intentions for the use of ICT (Information Communication
97 Technologies) (15). The integration of these two approaches can provide a fresh perspective
98 on the ways in which digital technologies may contribute to deepening health inequalities.
99

100 The notion of the digital divide has been described as a paradigm with two levels. The first
101 level refers to disparities in actual access to digital technology, and the second level goes
102 beyond access and explores the skills and abilities that are required to utilize these
103 technologies (11,16,17). Previous studies have shown that individuals with a higher
104 socioeconomic status are more likely to perform better on both levels of the digital divide.
105 Those with a more advantaged socioeconomic position have a better access to digital
106 technology and also more frequently have the skills required to used them, as compared to
107 individuals from lower socioeconomic strata (7,12,18,19). Evidence, mainly from the United
108 States, also suggests that racial and ethnic minority patients and those with lower incomes
109 are less likely to have access to and to adopt patient EHRs (10,18). Indeed, it is most likely

110 that those with higher incomes will have earlier access to material goods such as computers,
111 portable health devices or various health monitoring software. Additionally, those with a
112 higher education level are more inclined to use some form of information technology,
113 mostly through their job positions as compared to those from the lower occupational
114 categories whose jobs do not necessarily required contact with ICT.

115

116 Van Dijk (2006) further distinguishes four broad categories in research on the digital divide:
117 motivational access; physical access; skills and the actual use of digital technologies. He
118 argues that prior to physical access to a digital tool, people need to wish to have access – “*a*
119 *much neglected phenomenon*” in the digital divide literature (16). The disengagement with
120 new technologies is explained as involuntary and related to possibilities and lack of
121 opportunities – some people simply do not have access to an ICT or a certain digital
122 technology (20), however, even in places where everyone has access, some people are still
123 not utilizing ICT (21). This points to the need to look beyond physical access and examine
124 more challenging notions of ‘choice’ and ‘cultural legitimacy’ linked to peoples’ social
125 positions and lifestyles (22). Indeed, the notion of choice goes back to the sociologist Pierre
126 Bourdieu (1984) who argues that people from more affluent social-economic backgrounds
127 make strategic choices that oftentimes lead to a long-term benefit (23). In the context of the
128 choice as to whether to access their EHRs or not, we can assume that individuals who are
129 more motivated to use this digital tool could exploit its potential and turn it to their health
130 advantage. Conversely, individuals from lower socioeconomic background express a feeling
131 of cultural illegitimacy about using digital devices and generally feel that “the use of ICT
132 oversteps their social position” (24:9). Although some of Bourdieu’s concepts such as
133 “choice of necessity” and “cultural illegitimacy” has been evidenced in the utilisation of

134 healthcare services and digital self-tracking apps (24, 25) they have not been studied in the
135 field of use and access to EHR. Thus, while the digital divide approach is useful to
136 understand which groups are disadvantaged in the use of new digital technologies and why,
137 it is important to identify specific behavioural processes that lead to individuals' acceptance
138 and intention to adopt the EHR. This type of approach its best represented by the UTAUT
139 model.

140

141 The Unified Theory of Acceptance and Use of Technology (UTAUT) model by (15) integrates
142 behavioral elements of eight different models and which aims to explain the intention to
143 use digital technologies through six main constructs, known as:

144 (1) Performance expectancy: the degree to which individuals believe that the digital
145 technology will improve their performance;

146 (2) Effort expectancy: the ease of use of the digital technology;

147 (3) Social influence: the degree to which an individual knows someone who uses that
148 technology;

149 (4) Facilitating conditions: the degree of perceived support to use the technology;

150 (5) Personal attitudes towards using digital health technologies;

151 (6) Anxiety: fear of using digital technologies.

152

153 Proponents of this theory argue that digital technologies, even if available, are not always
154 accepted by individuals for various reasons, such as: devices that are hard to use, lack of
155 training and computer skills, not seeing the added value in the technology and low self-
156 efficiency and social support (26). However, results show multiple discrepancies in
157 explaining the factors that contribute to the use of digital devices. Hoogenbosch B. *et al.*,

158 found that effort and performance expectancy were the only constructs that significantly
159 influence patients' use of a health portal (27). Drawing on the UTAUT model, Hoque R and
160 Sorwar G (2017) revealed that, with the exception of facilitating conditions, none of the
161 constructs were associated with the use of a health technology (28). In addition, researchers
162 that used this model have also argued that the use and the adoption of digital technologies
163 is moderated by sociodemographic variables, especially age and gender (15,29). However,
164 literature on the digital divide has shown that there is also a socioeconomic dimension to
165 these disparities that has to be considered.

166

167 In this context, the focus of this paper is therefore to integrate the digital divide literature
168 with the UTAUT concepts to provide a better understanding of the socioeconomic and
169 behavioural determinants linked to individuals' motivations, intentions and access to
170 patients EHRs. Indeed, as van Dijk (2006) highlights that there is a lack of interdisciplinary
171 research, as well as a need to incorporate social psychology into the digital divide research.
172 We believe that UTAUT can shed light on important mechanisms that determine the higher
173 acceptance and use rates among those from more affluent backgrounds. Hence, this study
174 goes beyond the socioeconomic circumstances of individuals by incorporating the UTAUT
175 model.

176

177 In particular, we are interested to know:

- 178 • Which sociodemographic and socioeconomic factors determine different stages of
179 EHR use: desire to access, physical access and intention to regularly use EHR?

- 180 • What behavioural factors linked to the use and acceptance of technology are
181 associated with the intention to regularly use EHR, and are these determined by the
182 socioeconomic characteristics of the individual?

183 **Methods**

184 ***Study design and population***

185

186 The study was undertaken as part of a cross-country, collaborative project (INTERREG-APPS)
187 in the Greater Region (30), a cross-border region consisting of the areas of Lorraine (France),
188 the whole of Luxembourg, Rhineland-Palatinate and Saarland (Germany), and Wallonia
189 (Belgium) (Appendix 1: figure of the map of the Great-Region). It served also as a tool to raise
190 awareness on the existence of the EHR in the Greater Region (with the exception of Germany
191 where as mentioned above EHRs are not yet available).

192

193 A self-administrated questionnaire was developed with a small group of patients'
194 representatives of each country. The participants (above 18 years) were recruited online and
195 also via various patients' associations, hospitals and health clinics. The survey was piloted
196 among 24 people across the regions to ensure the validity and reliability of the questions, and
197 to check completion time and participant comprehension. Following the pilot study, a minor
198 adjustment was made to reflect participant comments. The final version of the survey
199 included questions on demographics, socioeconomic and health status, desire and intention
200 to use their EHR, and current access and use of EHR. After translate and back-translate by
201 native experts, the questionnaire was offered in four different languages: French, German,
202 Luxembourgish and English.

203 **Outcome Measures**

204 The main three outcome variables in this study were:

205 (1) Having physical access to EHR (*“Do you currently have access to your Electronic*
206 *Health Record?”*) measured as a binary indicator (yes, no). Those who answered by
207 the negative on this question were directed to the next outcome.

208 (2) The desire to access EHR (*“Would you like to have access to your Electronic Health*
209 *Record?”*). It is important to mention that if respondents indicated that they do not
210 wish to access their EHR, they were automatically re-directed to the demographic
211 and socioeconomic questions and did not respond to the third outcome of interest in
212 order to limit missing data.

213 (3) The intention to regularly use their EHR (*“I intend to use my EHR on a regular basis”*)
214 was assessed using a five-point Likert scale from “strongly disagree” to “strongly
215 agree”. This is one of the most used dependent variables in the UTAUT model and a
216 very strong predictor for actual use of digital technologies (31,32).

217 **Independent variables**

218 As previous studies show disparities in the use and access to digital health technologies, we
219 used income, education and country of origin as the main socioeconomic status indicators.

220 When possible, these sociodemographic and socioeconomic questions were drawn from
221 established surveys. As educational systems vary across countries, we used the ISCED-2011
222 educational levels classification to harmonise the educational levels across countries.

223 Household income was measured by self-assessed comfort with participant household

224 income. The question asked respondents to rate their income from: being comfortable on
225 present income; coping on present income; finding it difficult; and finding it very difficult on
226 present income. Furthermore, we also looked at the association of the technology adoption
227 constructs measured through the six items mentioned above: performance and effort
228 expectancy; social influence; facilitating conditions; anxieties; and personal attitudes
229 towards digital technologies using the UTAUT model by Venkatesh et al. (2003).

230 ***Covariates***

231 A number of confounders were thought to be associated with both access to and intention
232 to use EHR, as well as the socioeconomic characteristics of the participants, such as age,
233 gender, employment and partnership status. Previous studies have shown that poor health
234 status and the presence of disease is also associated with the increased probability of using
235 digital health technology (33,34). Hence, we also controlled for self-reported chronic disease
236 (yes/no). To account for country-level heterogeneity and differences in the health care
237 systems we accounted for countries-fixed effects (35).

238 ***Data analysis***

239 We used descriptive statistics to analyse the characteristics of the sample. To answer what
240 factors are associated with having access to and the desire to access their EHR, we used
241 logistic regressions. For the third dependent variable that measures the degree to which
242 individuals intend to use their EHR, we used linear regressions. However, to facilitate
243 interpretation of the UTAUT six-item components, we utilised explanatory factor analysis
244 with orthogonal rotation to group similar items into broader concepts. Explanatory factor
245 analysis groups together interrelated items in order to reduce the dimensions of variables

246 by clustering items that are highly correlated into a factor which can then be included in the
 247 regression analysis (36). To ensure that the all the variables in the UTAUT construct are
 248 correlated in the same direction i.e. positively correlated, before performing the factor
 249 analysis we reversed the scale that measured the anxiety levels, and named it lack of
 250 anxiety. Internal consistency among the different factors across the UTAUT, was tested
 251 using Cronbach's alpha.

252 Results

253

254 *Sample characteristics*

255

256 A total of 829 individuals completed the questionnaire. The majority of the sample was
 257 female (60%). Its mean age was 44.4 years. While a total of 615 respondents (83%)
 258 expressed that they want access to their EHR, 62 respondents (7,5%) said they already have
 259 access, and of those only 22 (35%) have already used their EHR. The majority of the
 260 respondents were born in one of the countries represented in the Greater region (87%),
 261 with 13% were born outside these four countries. Further participant characteristics are
 262 presented in Table 1.

<i>Table 1: Description of the sample</i>	<i>%</i>	<i>N</i>
Gender		
Male	40.07	331
Female	59.93	495
Age		
(mean, SD)	44.4	16.84
Country of residence		
Luxembourg	27.26	226
Belgium	50.78	421
France	14.60	121
Germany	7.36	61

Migration status		
Born in a county of GR	86.83	646
Not born in a country of GR	13.17	98
Partnership status		
Living in a partnership	17.88	145
Not living in a partnership	82.12	666
Education		
Primary or less	2.47	20
Secondary	54.81	444
University	42.72	346
Income perception		
Comfortable with their income	39.70	318
Coping on their income	36.70	294
Finding it difficult on their income	17.85	143
Finding it very difficult on their income	5.74	46
Employment status		
Yes	54.23	449
No	14.73	122
Other	31.04	257
Presence of chronic disease		
Yes	36.75	301
No	63.25	518
Want access to their EHR		
Yes	82.55	615
No	17.45	130
Have access to their EHR		
Yes	7.48	62
No	92.52	767
Intend to use EHR regularly		
(Mean, SD)	3.52	1.03

263

264

265 ***Results from the exploratory factor analysis***

266

267 The factor analysis pointed to the existence of three key dimensions among the eight
 268 questions asked to represent the six dimensions of the UTAUT. The first factor grouped the
 269 perceived usefulness and ease of use in one common factor, the second factor grouped the
 270 variables that describe social capital, including social support, and the last one grouped the
 271 two items that measure an individual's anxiousness in the use of digital technology. The
 272 table from the detailed results from the factor analysis can be found in Appendix 2.
 273 Cronbach's alpha coefficient confirmed the reliability of the factors ($\alpha = 0.79$), with the set
 274 of items being closely related with a relatively high internal consistency. The three factors

275 were used instead of the eight answers to UTAUT-related questions in the regression
276 analysis.

277

278 ***Multivariate regression***

279

280 Table 3 shows the associations of the demographic and socioeconomic factors with whether
281 individuals want to access their EHR at all, and the likelihood of respondents reporting
282 access.

283

284 *Desire to access EHR and actual access*

285 After controlling for country fixed effects and demographic variables, the results indicate
286 that a higher educational level (OR=2.35, 95% CI = 1.36-4.05) and living comfortably on
287 income (OR=1.87, 95% CI = 1.11-3.13) are positively associated with the desire to have
288 access to their EHR in the expected direction. However, being over the age of 65, and being
289 a migrant, i.e., born outside of the Greater Region, was negatively related to the desire to
290 access their EHR. Women were more likely to report the desire to access their EHR
291 (OR=2.14, 95% CI = 1.36- 3.37). In this sample, the presence of a chronic disease,
292 partnership status and number of individuals in one's social network were not associated
293 with having a physical access and to desire to access EHR.

294

295 Looking more closely at the interplay between the sociodemographic and socioeconomic
296 indicators, being a migrant and living comfortably on present income was significantly
297 associated with the desire to access EHR, with however large confidence intervals, likely due
298 to the small sample size. We thus report the descriptive statistics (not presented in this

299 article): firstly, compared to 16 percent of non-migrants, 24 percent of migrants reported
 300 that they do not wish to access their EHR. Of migrants who do not wish to access their EHR,
 301 the majority (71 %) stated that it is difficult or very difficult to live on their present income.
 302 On the other hand, 76 percent of those migrants who wish to have access to their EHR
 303 stated that they are comfortable or coping on their present income.

304

305 Exploring the relationship between those who have physical access to their EHR and the
 306 different sociodemographic variables, we found that those born outside of the Greater
 307 Region and those who reported that they are living comfortably or coping on present
 308 income were more likely to have physical access to their EHR (OR=2.59, 95% CI = 1.087-
 309 6.158), (OR=2.56, 95% CI = 1.060-6.188), respectively.

310

311

312

313

Table 3: Logistic regression, desire to access and physical access to EHR in the Great region

Outcomes:	Desire to access their EHR			Have physical access to EHR		
	OR	95%CI		OR	95%CI	
Country (Ref. group: BE)						
DE	0.915	0.319	2.623			
FR	1.746	0.676	4.510	4.444	0.157	12.57
LU	3.014	1.557	5.834	1.263	0.554	2.878
Gender (Ref. group: Male)						
Female	2.139	1.357	3.372	0.705	0.342	1.451
Age (Ref. group: 18-15)						
36-65	.911	0.525	1.581	1.784	0.717	4.443
over 65	0.487	0.240	0.987	3.000	0.873	10.31
Partnership status						

326 use of medical records. As we were particularly interested in the interplay of the UTAUT
 327 behavioural variables with socioeconomic factors we also modelled an interaction between
 328 the education level and the UTAUT factors (not presented), however the pairwise
 329 interaction was not significant, and therefore not included in the model.

Table 4: OLS regression, relationship between intention to regularly use EHR and demographic, socioeconomic and behavioural factors

	Model 1			Model 2		
	Coef.	95% CI		Coef.	95% CI	
Country (Reference group: BE)						
DE	0,130	-0,241	0,502	0,174	-0,268	0,615
FR	0,172	-0,086	0,430	0,151	-0,086	0,388
LU	0,429	0,196	0,662	0,394	0,202	0,586
Gender (Reference group: Male)						
Female	0,140	-0,041	0,321	0,098	-0,066	0,261
Age						
	0,005	-0,001	0,011	0,004	-0,001	0,009
Partnership status (Ref. group: not living in a couple)						
Living in a couple	0,036	-0,208	0,281	0,000	-0,214	0,214
Migration status (Ref. group: born in the GR)						
Not born in the GR	-0,189	-0,494	0,115	0,023	-0,260	0,305
Employment status (Ref. group: employed)						
Not employed	-0,026	-0,271	0,219	-0,023	-0,224	0,178
Chronic disease (Ref. group: Living with a chronic disease)						
No	-0,174	-0,369	0,021	-0,225	-0,387	-0,063
Perception of income (Ref. group: difficult/very difficult)						
copied/comfortable	0,211	-0,002	0,423	-0,011	-0,213	0,191
Education (Ref. group: secondary and less)						

University and above	0,181	0,007	0,356	0,092	-0,060	0,245
Use of Technology						
EHR useful & easy				0,550	0,456	0,645
Social support				0,123	0,032	0,213
Lack of anxiety				0,204	0,116	0,292

330 Discussion

331

332 This study contributes to the literature on EHR access and adoption in two ways. The study
333 explores different stages in the adoption of EHR, mainly desire to access, physical access and
334 intention to regularly use patient EHRs, and integrates both socioeconomic and technology
335 related factors. The findings suggest that although closely related, each of the three stages
336 of EHR use is determined by different factors. While education plays a larger role in the
337 desire to have access to EHR, the effect of income operates through the possession of the
338 material factors needed to have physical access to EHR. On the other hand, for respondents'
339 intentions to regularly use their EHR, socioeconomic factors were supplemented by the
340 perceived usefulness and ease of navigation of the EHR, as well by an individual's level of
341 social support. Some of the main findings is that there is a clear gradient in the desire to
342 access EHRs and in actual access, with those more educated and living comfortably on
343 present income showing a stronger desire to obtain access to their EHR. This is in line with
344 previous research indicating that those from lower socioeconomic backgrounds show lack of
345 interest in digital devices (24,37). Migrants and those living more comfortably on present
346 income are more likely to have an actual access to their EHR compared to those living less
347 comfortably. As some studies highlight this might be linked to the ability to own
348 technologies or broadband internet, or a higher awareness of their existence (10,16,38).
349 Migrants may be also more likely to possess digital devices and internet as a mean of
350 communication with their families and friends in the country of origin. However, when it

351 comes to the desire to access EHR, the results demonstrate that being a migrant, male and
352 of older age is negatively associated with the desire to access EHRs. Some scholars point
353 out, that the desire to access to EHR might be linked to the issue of trust in health
354 professionals, anxieties and technophobia (9,16,39). Stronger anxiety, feelings of cultural
355 illegitimacy, reluctance or even rejection of ICT has been also shown to act as a barrier of
356 use and adoption of health digital technologies among the lower socioeconomic cohorts
357 (24).

358

359 The study further highlights the importance of perceived income among migrants when
360 looking at issues of desire to access EHR. Income comfort among migrants was an important
361 determinant of whether they want to access their EHRs, with those feeling in a difficult
362 financial situation not wishing to have access to EHRs at all. On the contrary, migrants who
363 are feeling more comfortable with their income were more likely to want to have access and
364 to have an actual access to their EHR, which shows the disadvantages faced by migrants
365 with a lower perceived income. Drawing on Bourdieu's theory of practice, and his concept
366 of 'choice of necessities' this could be explained through the fact that peoples' lifestyle
367 choices and attitudes are based on their socioeconomic circumstances (23). Those who are
368 free of economic necessities are able to make long-term choices that are independent of
369 their day-to-day circumstances. In this context, it could be argued that those who feel more
370 financially comfortable can make more long-term strategic choices such as having access to
371 their EHR in order to better manage their health. Therefore, health professionals play a vital
372 role in showing the benefits of the EHR and in offering encouragement to individual to
373 obtain access to their records. An alternative possibility would be to provide universal EHR
374 access on an opt-out basis, with a possibility to close or permanently delete the EHR at any

375 time. At the moment, individuals who are aware of the existence of EHRs can voluntarily
376 access or they are invited to access their records by their clinicians. However, as evidenced
377 by Ancker et al., 2017, an opt-in policy of access to patient portals was associated with
378 socioeconomic disparities (10). Of course, for this policy to be fruitful more structural
379 factors have to be addressed such as access to a computer and the internet.

380

381 On the other hand, our results demonstrate that UTAUT provides a useful framework to
382 uncover specific mechanisms through which individuals intend to use their EHR on a regular
383 basis. In this sample, perceived usefulness and ease of use were the strongest predictors of
384 EHR acceptance and use, followed by social support and anxieties related to the use of new
385 technology or data security. Although in the first model we found that education was
386 associated with the regular use of EHR, in the model where we included the UTAUT-derived
387 factors, education lost its significance. This results are somewhat surprising as in the digital
388 divide literature it has been noted that technical competence and digital literacy is a strong
389 factor that influences the use of technology (11,16). However, we assume that with the
390 current regression model it is difficult to disentangle the effect of education and the UTAUT
391 derived factors. More complex mediation analysis is required to uncover the pathways
392 through which socioeconomic factors play role in the specific UTAUT constructs. Finally, our
393 findings confirmed results of other studies and showed the presence of chronic disease is
394 closely related to the individuals use of EHR.

395

396 Although this study is based on a unique harmonised cross-country design, given the
397 limitation of the sample and the nature of the convenience sampling technique, there could
398 be selection bias due to selective enrolment into the project. Although in-person survey

399 promotion was undertaken in some countries, the answers might be biased towards those
400 who already have access to a computer or the internet. However, prevalence of EHR use in
401 LU in this study was in line with the prevalence of use in the general population. A
402 comparison of EHR users in this study with EHR users in the general population of the four
403 involved countries is unfortunately not possible due to a lack of registries. Lastly, our results
404 are consistent with previous studies highlighting the importance of socioeconomic factors
405 and migration when considering adoption and use of EHR.

406

407 One limitation of this study was the small number of patients who actually used their EHR
408 (n=22). It was thus not possible to undertake multivariate statistical analysis on the
409 characteristics of these participants, and on whether there are any socioeconomic
410 differences in the purposes for which individuals used their EHR, and to fully understand the
411 digital divide phenomenon. With increasing prevalence of use in the general population,
412 further studies may be better able to provide insights into this facet of EHR use.

413 **Conclusion**

414

415 Our study highlights the importance of considering all stages in the use of EHR. If EHR are to
416 be implemented successfully and among all socioeconomic groups, policy-makers need to
417 take into consideration each stage of EHR use: desire to use EHR, make sure everyone is
418 aware and has a physical access to EHR, and encourage adoption and regular use of EHR,
419 though designing and promoting user-friendly records which are easy to navigate.

420 Availability of EHR is not sufficient as such and must come along with appropriate training of
421 individuals from lower socioeconomic background. At the same time health professionals
422 need to explain the added value of the EHR to their patients. Special attention needs to be

423 paid to those who are not motivated or who do not wish to have access to their EHR. As
424 our results demonstrated, these are the most disadvantaged groups who may not be able to
425 grasp the benefits they could derive from the regular use of their EHR. Failing to do so could
426 exacerbate already existing health inequalities.

427

428 **Abbreviations:**

429

430 EHR – Electronic Health Record

431 ICT – Information Communication Technologies

432 UTAUT - User Acceptance of Information Technology

433 INTERREG – Interregional

434 APPS - Approche Patient Partenaire de Soins

435

436

437

438 **Declarations:**

439

440 ***Ethical approval and consent to participate***

441 The study was granted ethics approval by all involved research institutions’ ethics review
442 panels (ERP 19-040 APPS-EHR INTERREG). Informed consent was obtained by all survey
443 participants.

444 ***Consent for Publication***

445 Not applicable

446

447

448

449 ***Availability of data and materials***

450 The dataset supporting the conclusions of this article is available from the corresponding
451 author upon reasonable request.

452

453 ***Competing interests***

454 The authors declare that they have no competing interests.

455

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459

460 ***Autors' Contributions***

461 IP and AL conceptualized and designed the study. IP conducted and interpreted the statistical
462 analyses and wrote the draft of the article. MB and BP acquired funding. MB, BP and LC
463 coordinate the research project APPS of which the study uses data. IP, ELB, BP, PB and MB³
464 contributed to data collection. All authors revised the article for intellectual content. All
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466

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