

Supplementary Material

Digital maturity and its determinants in General Practice: a cross-sectional study in 20 countries

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Abstract

Background: The extension to which digital technologies are employed to promote the delivery of high-quality healthcare is known as Digital Maturity. Individuals' and systems' digital maturity are both necessary to ensure a successful, scalable and sustainable digital transformation in healthcare. Digital maturity in primary care has been scarcely evaluated.

Objectives: This study assessed the digital maturity - as a whole and in its dimensions - in General Practice and evaluated how participants' demographic characteristics, practice characteristics and features of Electronic Health Records (EHRs) use are associated with digital maturity.

Methods: General Practitioners (GPs) across 20 countries completed an online questionnaire between June and September 2020. Demographic data, practice characteristics and features of EHRs use were collected. Digital maturity was evaluated through a framework built upon usage, resources and ability (divided in this study in its collective and individual components), interoperability, general evaluation methods and impact of digital technologies. Each dimension was rated as 1 or 0. The digital maturity score is the sum of the six dimensions and ranges from 0 to 6 (maximum digital maturity). Multivariable linear regression was used to model the total score, while multivariable logistic regression was used to model the probability of meeting each dimension of the score.

Results: 1,600 GPs (61% female, 68% Europeans) participated. GPs had a median digital maturity of 4 (P25-P75: 3-5). Positive associations with digital maturity were found for: being male ($B=0.18$ [95%CI 0.01;0.36]), use of EHRs for longer periods ($B=0.45$ [95%CI 0.35;0.54]) and higher frequencies of access to EHRs ($B=0.33$ [95%CI 0.17;0.48]). Practising in a rural setting was negatively associated with digital maturity ($B=-0.25$ [95%CI -0.43;-0.08]). Usage (90%) was the most acknowledged dimension while interoperability (47%) and use of best practice general evaluation methods (28%) were the least. Shorter durations of EHRs use were negatively associated with all digital maturity dimensions (aOR from 0.09 to 0.77).

Conclusions: Our study demonstrated notable factors that impact digital maturity and exposed discrepancies in digital transformation across healthcare settings. It provides a roadmap for policymakers to develop more efficacious interventions to hasten and take the best advantage of digital transformation in General Practice.

Table 4 - Multivariable logistic regression models to explain each dimension of the framework: usage, collective resources and ability, individual resources and ability, interoperability, general evaluation and impact. Reference – the category used as reference. OR – Odds Ratio; 95%CI - 95% Confidence Interval; GP- General Practitioner, EHRs - Electronic Health Records

Characteristics	Usage		Collective Resources and ability		Individual Resources and ability		Interoperability		General Evaluation Methods		Impact	
	OR [95% CI]	P	OR [95%CI]	P value	OR [95% CI]	P value	OR [95% CI]	P	OR [95% CI]	P	OR [95% CI]	P
		value						value		value		value
Gender												
Male					1.33 [1.00;1.80]	0.047					1.35 [1.07;1.72]	0.013
Female	Reference											
Age												
< 30 years											5.30 [1.58;17.76]	0.007
30-39 years											3.69 [1.21;11.26]	0.022
40-49 years											4.58 [1.50;13.97]	0.007

50-59 years							3.82 [1.25;11.66]	0.019
60-69 years							3.41 [1.11;10.48]	0.032
70+ years	Reference							
Country								
European					1.42 [1.11;1.80]	0.003	0.68 [0.52;0.88]	0.005
Non-European	Reference							
Years of experience as GP								
<5 years	2.42 [1.37;4.38]	0.003						
5-10 years	1.72 [0.97;3.05]	0.063						
10-15 years	1.58 [0.83;3.01]	0.161						
>15 years	Reference							
Hours of clinical work per week	0.99 [0.98;1.00]	0.022						

Rural setting of practice												
Yes					0.67 [0.51;0.88]	0.004						
No	Reference											
Duration of use of EHRs												
Only after COVID-19 outbreak	0.12 [0.04;0.37]	<0.001	0.14 [0.05;0.40]	<0.001	0.49 [0.17;1.44]	0.195	0.29 [0.10;0.80]	0.018	0.35 [0.10;1.22]	0.099	0.33 [0.11;1.04]	0.059
Before COVID-19 outbreak. but < 2 years	0.09 [0.04;0.18]	<0.001	0.16 [0.09;0.26]	<0.001	0.47 [0.28;0.80]	0.005	0.28 [0.16;0.47]	<0.001	0.27 [0.14;0.53]	<0.001	0.49 [0.28;0.83]	0.008
[2-5[years	0.17 [0.09; 0.31]	<0.001	0.27 [0.19;0.40]	<0.001	0.47 [0.33;0.69]	<0.001	0.43 [0.30;0.60]	<0.001	0.65 [0.31;0.70]	<0.001	0.54 [0.37;0.79]	0.001
[5-10] years	0.52 [0.29;0.92]	0.028	0.54 [0.37;0.77]	0.001	0.77 [0.55;1.07]	0.119	0.51 [0.39;0.68]	<0.001	0.61 [0.45;0.82]	0.001	0.62 [0.46;0.84]	0.002
> 10 years	Reference											
Frequency of access to EHRs												
Less than 1* month	0.18 [0.06;0.54]	0.002	0.39 [0.13;1.18]	0.095	0.35 [0.12;1.02]	0.054					0.16 [0.03;0.75]	0.020

At least 1*month	0.33 [0.08;1.38]	0.130	0.50 [0.13;1.93]	0.315	0.20 [0.05;0.75]	0.017	0.35 [0.0.9;1.42]	0.141
At least 1* week	0.43 [0.16;1.17]	0.098	0.85 [0.32;2.21]	0.732	0.55 [0.21;1.41]	0.211	0.86 [0.34;2.19]	0.755
More than 1* week	0.28 [0.14;0.55]	<0.001	0.41 [0.23;0.74]	0.003	0.47 [0.26;0.84]	0.011	0.66 [0.38;1.16]	0.153
Everyday	Reference							
