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Current allergy educational needs in primary care. Results of the EAACI working group on primary care survey exploring the confidence to manage and the opportunity to refer patients with allergy.

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Title: Current allergy educational needs in primary care. Results of the EAACI working group on primary care survey exploring the confidence to manage and the opportunity to refer patients with allergy.

Short running title: Allergy educational needs in primary care in Europe.

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ABSTRACT:

The aim of this survey was to explore the specific educational needs of a cohort of European GPs with regards to allergy training so that future educational initiatives may better support the delivery of allergy services in primary care. Method: This study took the form of a cross-sectional observational study in which a structured electronic questionnaire was distributed to primary care providers, in eight languages, across 8 European countries between September 2019 and November 2019. Data associated with demographic parameters, professional qualifications, type of employment, level of confidence regarding competencies for diagnosis and treatment of allergic diseases, referral of patients to allergist and preferred method of learning and assessment were collected. A 5-point Likert scale was used to assess level of confidence. Exploratory analysis was carried out. Results: A total of 687 responses were available for analysis, with 99.3% of responders working within Europe. 70.1% of participants were female; and 48.0% and 48.0% of participants respectively had received some undergraduate and/or postgraduate allergy education. Confidence in dealing with different aspect of allergy management differed between countries. The main reason for specialist referral was a perceived need for tertiary assessment (54.3%) and the main barrier for referral was the consideration that the patient's condition could be appropriately diagnosed and treated in a primary care facility. Up to 44.7% and 55.3% of participants reported that they preferred e-Learning over traditional learning. Conclusions: This study identified the specific areas of skills

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3 43 training and educational needs of GPs in managing allergic conditions in primary care, and provided
4 44 insights possible strategies for more feasible and cost-effective approaches.
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8 46 **KEY WORDS: education; allergy diagnosis; allergy treatment; learning methods; primary care.**
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11 48 **INTRODUCTION**

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14 49 Over the last few decades, considerable advances have been made in our understanding of allergic
15 50 diseases, particularly with regards to the aetiology of disease, underlying mechanisms
16 51 (immunology), and clinical parameters such as approaches to diagnosis, and treatment. Allergic
17 52 diseases pose a huge burden on individuals, the community, and the health care system.¹ Allergic
18 53 diseases are highly prevalent and have been identified as a high burden public health problem which
19 54 needs to be urgently addressed.² In addition, the associated direct and indirect health care costs of
20 55 these diseases are extremely high.³

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23 56 Despite this heterogeneity in allergy services have been identified ⁴ and few medical school faculties
24 57 regard allergology as a specific and discrete subject area; consequently, undergraduate training in
25 58 this field is deficient. Consequently, most people with allergic conditions are initially assessed by a
26 59 primary care physician who may not be adequately skilled in the management of allergic diseases.^{5,6}

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28 60 The World Allergy Organization (WAO) issued a warning concerning the gaps between knowledge
29 61 and practice in the field of allergy management, subsequently presenting its position paper
30 62 "Recommendations for Competency in Allergy Training for Undergraduates Qualifying as Medical
31 63 Practitioners".⁷ To date, there is little evidence of an appetite to incorporate allergy in the
32 64 undergraduate curriculum.

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35 65 In Europe, about 30% of the population suffer from an allergic disease and the prevalence is
36 66 increasing.⁸ Greater knowledge of allergic diseases by health care providers would be expected to
37 67 result in more rapid diagnosis, more adequate treatment, and better quality of life for those who
38 68 suffer from allergic diseases.²

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41 69 Primary care (PC), which includes general practitioners (GP), family practitioners, family physicians
42 70 or paediatricians, can reinforce its role in health care as the first point of contact for patients with
43 71 allergic symptoms.⁵ In fact, the need for primary care to be involved in the management is critical as
44 72 in many areas of Europe⁹, there are insufficient allergists to support the rising prevalence of
45 73 allergies.^{5,6} Herein lies the challenge; although PC providers are generally well trained, evidence
46 74 suggests a deficiency of knowledge, skills and resources to independently manage patients with
47 75 allergies independently with confidence. ^{5,6} Attempts to circumvent this barrier to allergy
48 76 management have been developed and take the form of initiatives such as clinical algorithms¹⁰ or
49 77 allergy management support systems in primary care.¹¹ However, these initiatives do not address
50 78 the fundamental issue of PC education of allergy at undergraduate and postgraduate levels, which
51 79 clearly needs to be improved in order to improve outcomes.⁷ In the UK a national allergy education
52 80 strategy is being devised covering all health care professionals and this has the potential to be a
53 81 basis for wider work across Europe.¹²

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57 82 The European Academy of Allergy and Clinical Immunology (EAACI) working group on PC recognizes
58 83 the needs of our patients, health systems and the scientific community, to improve the quality of
59 84 practice, incorporating a patient centred approach, developing integrated care models and better
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3 85 defining the role of PC in the diagnosis and management of allergic diseases. In line with the EAACI
4 86 white paper strategy document¹³, it is further recognised that there is a strong need to reinforce the
5 87 collaboration and communication between primary care and specialized care for patients with
6 88 allergic disease(s).

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9 89 Although some regional scientific allergy societies and specialists have developed continuous
10 90 medical education modules on this topic, for a consistent approach it is necessary to know and
11 91 understand the needs perceived by primary care professionals.⁶ A previous EAACI primary care
12 92 working group survey on educational needs was carried out from June to September 2014 and the
13 93 results were reported in 2017. In this study, self-declared gaps in knowledge were expressed for
14 94 most manifestations of allergy with a correspondingly high self-expressed educational need.¹⁴

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16 95 There is clearly a need to bridge the educational gaps of health care providers in PC. The explosion of
17 96 allergy-related disorders coupled with their increased prevalence has left GPs feeling vulnerable,
18 97 particularly as allergy appears to be virtually excluded from both undergraduate and postgraduate
19 98 GP training¹⁵, in spite of repeated calls for improved education to improve outcomes¹⁶, with deficits
20 99 being recognized across healthcare systems.¹⁷ These concerns are shared with paediatricians, who
21 100 are often the first point of call for children in many countries.¹⁸ It is of note that one of the
22 101 consequences of this skill and knowledge deficit is many unnecessary referrals to specialist clinics.¹⁹
23 102 Work has also been undertaken to describe the core competencies required by GPs²⁰, allied health
24 103 care providers²¹, and those which might be needed to provide a specialized level in primary care (GP
25 104 with a specialist interest in allergy (GPwSI)). GPwSIs are generally GPs who also work part-time in a
26 105 defined clinical role. They see 7% of allergy referrals in the UK and have been instrumental in
27 106 developing new models of care.^{19, 22} In light of this, work has been undertaken to describe the core
28 107 competencies required by GPs to provide allergy care and those which might be needed to provide a
29 108 specialized level in primary care.²⁰

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31 109 The aim of this survey was to explore the specific educational needs of a cohort of European GPs
32 110 with regards to allergy training so that future educational initiatives may better support the delivery
33 111 of allergy services in primary care.

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113 **METHODS**

114 An electronic questionnaire was developed by the EAACI-WGPC (Working Group on Primary Care) in
115 collaboration with the EAACI Marketing and Communications Department (A completed example
116 attached as Annex S1). Questionnaire development was based on empirical evidence and expert
117 opinion. The layout and accessibility of the different language versions of the questionnaires were
118 centralized by this EAACI Department.

119 A structured questionnaire, administered through Survey Monkey (demographic parameters,
120 professional qualification, type of employment, level of confidence regarding competencies for
121 diagnosis and treatment of allergic diseases, referral of patients to allergist and preferred method of
122 learning and assessment) was made available in eight languages (English, Dutch, Italian, Spanish,
123 Greek, Polish, French and German) and distributed to eight different European countries during the
124 period September to November 2019. Prior to dissemination, a pilot study was carried out in Spain
125 (20 April to 5 May 2019) to test the functionality of the survey.

126 Distribution of the questionnaire to primary care health care professionals was enabled through
127 regional GP scientific societies or GP networks. These varied across the different countries. Local
128 participating Societies were emailed with the corresponding survey link, which was made available
129 to PC providers through their local PC societies' websites with the aim of recruiting as many PC

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3 130 providers as possible (including nurses and other allied professions). All national colleges and
4 131 associations of PC, which appear on the WONCA (World Organization of National Colleges,
5 132 Academies and Academic Associations of General Practitioners/Family Physicians, Europe) website,
6 133 were emailed in a bid to increase exposure (time to respond, reminders, etc).

8 134 Thirty surveys per participating country was the cut-off for inclusion and statistical analysis.
9 135 Frequencies and percentages were calculated. The sample size is reflective of a convenience sample;
10 136 the recruitment period was from September to November 2019. Participation and survey responses
11 137 were anonymized. Given that this was a non-interventional study to understand clinician's
12 138 educational needs, ethics committee approval was not sought. Participant confidentiality was been
13 139 maintained.

16 140 The online questionnaire consisted of 18 items and an open field to include any additional
17 141 comments, covering 6 domains (participant and practice demographic data, type of
18 142 employment/practice, level of confidence (knowledge/skills), factors influencing referral/lack of
19 143 referral to allergy specialist, access to allergen immunotherapy and preferred methods of learning)
20 144 (Annex S1). Responders were asked to rate their confidence across several different areas of allergic
21 145 disease management on a scale of 1 to 5, where 1 was no confidence and 5 was very confident. The
22 146 investigators then classified a score of 4 or 5 to the label "confident" and scores 1, 2 or 3 to the label
23 147 "not confident", in order to aid analysis and facilitate interpretation.

26 148 Statistical analysis: descriptive analysis was carried out and summary statistics were produced
27 149 (mean, standard deviation (SD), median and interquartile range (IQR; 25th and 75th percentiles) for
28 150 the continuous variables, and counts and percentages for the categorical variables, respectively).
29 151 Crosstabs relationship for a limited number of variables related to education related to education
30 152 were performed using chi² test (level of confidence 95%) (learning and assessment method
31 153 preference and age; education, learning and assessment preference and country)

34 154 **RESULTS-**

36 155 The e-questionnaire was successfully distributed to the targeted 8 countries. The countries from
37 156 which a minimum of 30 responses were received were UK n=348, Spain n=133, The Netherlands
38 157 n=57, Poland n=69 and Italy n=83, providing 690 responses for analysis. Responses received from
39 158 allergists (n=56) were not included. Of the responses, 348 were in English and 341 in other
40 159 languages. Three surveys were excluded based on members pilot study data, leaving a total number
41 160 of 687 evaluable surveys in total. Table 1 summaries the overall characteristics of responders.

44 161 The majority of responders (54.2%) were aged between 35-54 years age ranges; 70.1% were female,
45 162 99.3% were working within Europe. The most common area of practice was "Primary Care Clinician"
46 163 (67.9%, n=468). Most responders (68.2%, n=470) worked in a state or district health service, 11.2%
47 164 (n=77) in private practice, 2.0% (n=14) at a university, college and 0.3% (n=20) were retired. A
48 165 detailed summary of responder demographics is included in Table 1. A full demographic table
49 166 appears in Annex S2.

52 167 A specialist interest in allergy was reported by 22.5% (n=155) of responders; and of those, 78.0%
53 168 reported working 0-8hours/week in this field.

55 169 A majority of responders (64.7%, n=446) reported seeing between 0-10 patients per week whose
56 170 main complaint was an allergic problem. Seventy percent (70.3%, n=484) of responders reported
57 171 that less than half their patients visited a pharmacy exclusively prior to visiting them for their allergy
58 172 within the previously year.

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3 173 Overall 18.4% (n=127) of responders reported receiving no education associated with allergy: 48.0%
4 174 (n=331) and 48.0% (n=331) receiving allergy training as undergraduates and postgraduates
5 175 respectively. This varied greatly between different countries, with the highest proportion of
6 176 responders receiving training in The Netherlands and Poland (Figure 1). There was also a large range
7 177 in the proportion of responders who were aware of local GP guidelines for referral, with the highest
8 178 awareness amongst responders in The Netherlands (89.5%) and the lowest amongst those from Italy
9 179 (24.1%) (Figure 2). A low proportion of responders from all countries were aware of the EAACI
10 180 competencies for Allergy Health Professionals (AHP) for allergy (range 1.8% in The Netherlands to
11 181 13.2% in the UK) (Figure 2). There was a statically significant difference between knowledge of the
12 182 EAACI competencies document for AHP ($\text{Chi}^2\text{p}=0.001$, n=516) across the different countries (Annex
13 183 S5).

14 184 Table 2 summaries the proportion of responders with “Adequate” confidence in managing different
15 185 allergic conditions. Overall responders felt most confident to manage rhinitis/asthma (83.3%), and
16 186 least confident to manage occupational allergy (23.5%) (Annex S3). When it came to confidence in
17 187 understanding the basic management principles underpinning the treatment of allergic rhinitis,
18 188 anywhere between 47.3% and 83.8% of responders did not feel adequately confident in
19 189 understanding sensitisation, cross-reactivity, basic mechanisms, immunotherapy and environmental
20 190 control measures (Annex S3); while 56.2% and 50.0% felt adequately confident to provide advice on
21 191 risk assessment for anaphylaxis and prescription/training in adrenaline use respectively (Annex S3).
22 192 Responders were least confident in managing anaphylaxis, food allergy, drug allergy, latex allergy,
23 193 occupational allergy and venom allergy.

24 194 With regards to referral to an allergist, 43.8% of responders felt confident in identifying patients
25 195 who need a referral. Figure 3 summarises the factors influencing the responder’s decision to refer to
26 196 a specialist (Annex S3). Although the importance of the different factors for referral to an allergist
27 197 varied from country to country, in all countries the most important factor identified was “Need for
28 198 hospital assessment” ie need for specialist assessment (ranging from 29% to 78.9% of responders)
29 199 and the least influencing factor being “Lack of knowledge of the patient’s condition” (ranging from
30 200 2.9% to 32.3%). The greatest barrier to referral was the perception that the patient’s condition could
31 201 be diagnosed and treated in primary care (51.4%) and 15.8% felt there was long waiting time for the
32 202 specialist. Figure 3 summaries the difference between countries with regarding to referral. Ten
33 203 percent (10.6%) of responders did not refer to an allergist because there was no allergist in the
34 204 area/health system (Figure 4); 52.6% did not refer as they considered that the patient’s condition
35 205 could be treated in primary care (Figure 4).

36 206 There was a statistically significant difference between the different countries with regards to access
37 207 to fundamental investigations ($\text{Chi}^2\text{p}=0.000$, n=517) (Figure 5). Thus, specialist referral provided
38 208 access to investigations. Less than half the responders from the UK, Poland and Italy reported having
39 209 access to immunotherapy; approximately half in Spain (54.8%) and a majority in the Netherlands
40 210 (87.7%) (Figure 5). To the item “there are no allergists in my Area/Health System”, the lowest rate
41 211 was for Spain (0.8%), and the highest for Italy 14.5% (global 10.8% across Europe) (Figure 5).

42 212 Learning preferences for responders is summarised in Figure 6. There was a statistically significant
43 213 difference across the different age groups with regards to a preference for traditional versus e-
44 214 learning with responders aged 35-54 years old preferring e-learning over traditional learning relative
45 215 to the young and older aged responders ($\text{Chi}^2\text{p}=0.004$, n=513) (Table 3). Computers were the
46 216 preferred platform for learning (Table 3), Annex S4.

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DISCUSSION

The aim of this multi-national cross-sectional survey was to explore the specific educational needs of a cohort of European GPs with regards to allergy training. It was identified that there continues to be unmet need for primary care (PC) providers to be upskilled in the management of allergy across all aspects of allergy management, from education to reasons for referral to an allergist.

Firstly with regards to fundamental training at the undergraduate and postgraduate level, less than half the responders reported receiving allergy education at undergraduate level and almost 1 in 5 had not received any training on allergic disease at either undergraduate or postgraduate level. This is clearly unacceptable given the high prevalence of allergic disease and the complexity of the field of medicine as well as the subsequent high exposure of not only medical PC providers, but also allied health care providers, to patient with allergy. PC providers are increasingly required to be involved in allergy care and prevention, helping to ensure optimal care and provide needed reassurance, personalized education, and ongoing therapeutic support in order to help patients of all ages to balance safety with normal living. It is therefore important to ensure that all patients and families living with an allergy have access to a PC providers, across the health care disciplines including nurses, dietitians, psychologists, pharmacists and other important AHP, so that holistic care can be provided and that referrals to both GPs and allergist can be appropriately supported. The need for an integrated approach has been recognised^{21, 23} and with core competencies for primary care providers already having been proposed^{20, 21}, the next step would be for a global blueprint for allergy education for PC providers from undergraduate to continuing professional education levels to be developed.

This need for education is further reflected in the confidence levels reported by responders across the different countries. Overall, while the confidence level in different countries and across the different allergic conditions varied, overall confidence levels were low. Consistent with previous literature¹⁴, the overall confidence level of management of allergic conditions such as rhinitis/asthma, eczema/atopic dermatitis/anaphylaxis, anaphylaxis and urticaria/angioedema was higher than for other allergic conditions. While we were not able to determine whether this confidence was well founded ie we can not determine whether confidence is reflective of competence, it would appear there still remains a gap between how allergic conditions are being managed in real life. Just taking the example of allergic rhinitis, which was reported to be managed with 'adequate' confidence by responders, in real life about only 15% of people with allergic rhinitis are optimally treated²⁴ and over 50% of people with asthma live with poorly controlled allergic rhinitis²⁵ supporting the need for education across all allergic conditions and related comorbidities.

A very low number of responders were aware of EAACI competency guidelines, highlighting the need for improved dissemination of global strategies and frameworks specifically to penetrate PC colleges, organisations and networks and to identify and develop PC leaders and champions for allergy. When it comes to the possible mechanisms to enable this, both traditional and e-learning methods were preferred across different age groups. However e-learning may be the most feasible solution, from the perspectives of logistics, accessibility and acceptability especially more recently with the constraints of the pandemic. Many societies and education and conference providers have now developed user friendly platforms that can support this. Over half the study participants, slightly preferred e-learning to traditional methods, while categorisation of preferred learning methods across different ages groups indicated that there was only an overwhelming preference for traditional learning techniques in a very small of responders ie >65 years of age and a moderate preference in the 55-64 years old, who together made up about one quarter of the sample. While these results may reflect the study sample it is important to recognise that this sample was already a

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3 264 group of individuals who are willing to engage in online platforms, thereby participated in this online
4 265 survey. Further when divided by country, there are marked difference in the way in which PC
5 266 professionals from different countries preferred to receive education (for example, in Spain half the
6 267 participants reported a preference for e-learning whereas in Poland less than 1 in 5 preferred this
7 268 method. It should be noted that this survey was performed before epidemic COVID-19 and applies
8 269 to question and replies relating to e-Learning and on-line assessment. This may have impacted on
9 270 the result with regards to preferred platforms of learning.

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12 271 Another important aspect of this study is related to the process of referral to specialists. Most
13 272 responders were not aware of local country guidelines for referral and therefore, it is perhaps not
14 273 surprising that the majority of respondents in that study expressed a great lack of confidence in
15 274 identifying patients needing referral, and this was more apparent for allergen immunotherapy,
16 275 suggesting even greater lack of familiarity/access to this treatment, consistent with precious
17 276 findings.^{26, 27} Despite this lack of confidence, the main reason for not referring was because
18 277 responders felt that the patient could be managed in primary care; followed by the lack of access to
19 278 allergists. The latter is a major problem in some countries, where referral to an allergist can take
20 279 beyond 6 weeks¹. In contrast the main reason for referral was due to the need for allergist
21 280 confirmation of condition and management or because of recognised lack of knowledge. There
22 281 seems to be somewhat of a tension between the responses to different aspects of referral once
23 282 again highlighting the need for better education and support for PC professionals in their decision
24 283 making around allergy. Failure to have this critical need fulfilled is reflected in inappropriate referral
25 284 levels to specialist clinics.²⁷ Developing a cohort of GPwSIs, particularly in countries where there is a
26 285 deficit of allergists may offer a solution whereby shared care protocols for continuation of therapy
27 286 commenced by specialists in general practice may be used.

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29 287 We observed several differences of note across countries and this is most likely reflective of the
30 288 different health care systems. This is exemplified in the access to different allergy investigations and
31 289 immunotherapy across the different countries. This has previously been identified.^{28, 29} For example,
32 290 in Italy, one of the European countries with the highest counts of allergists³⁰, few GPs initiated or
33 291 administered immunotherapy because the majority of immunotherapy was prescribed/administer
34 292 when the patient is under the care of an allergist or being treated in a specialist unit. Very few GPs in
35 293 the UK initiate immunotherapy and the same pertains to Spain and Netherlands. Another difference
36 294 was noticed in confidence levels reported and noted earlier, with higher confidence being reported
37 295 amongst Dutch PC professionals, followed by those in Poland. PC providers in The Netherlands also
38 296 reported far greater access to allergy tests, immunotherapy coupled with high access to allergists,
39 297 suggesting that in The Netherlands, allergy is treated in PC to a far greater extent than in other
40 298 countries, consistent with PC professionals in The Netherlands having greater awareness of national
41 299 primary care food hypersensitivity guidelines.³¹ The possible explanations for this are complex and
42 300 can only be hypothesised at this point, but it is possible that overall, there is a more concerted
43 301 approach to supporting PC providers as the custodians of both acute and chronic illnesses in The
44 302 Netherlands, and this includes the management of allergic conditions. Overall, it does appear that
45 303 they are more involved themselves in the evolution of pathways and guidelines. Shared care models
46 304 for allergy immunotherapy have been successful in Finland where primary care workers spend time
47 305 in specialist units then form 'hub and spoke' models with specialist units.

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49 306 In considering the implications of these results, it is important to consider the limitations, the study
50 307 population and the timing of this research. It is possible that this group of PC providers is bias
51 308 towards those with and interest in allergy and those who are willing to engage with online
52 309 platforms. In addition, about one fifth actually said they had a special interest in allergy and over half

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3 310 saw fewer than 10 patients with allergy per week, with one fifth seeing up to 25 per week; we can
4 311 not verify the representative nature of these experiences. There was an uneven distribution of PC
5 312 professionals from the different countries, probably as a failure of awareness of the study amongst
6 313 those who were not interested in allergy or respiratory disease; it was not possible to continue to
7 314 recruit until equal representation from each country was achieved. In order to address the
8 315 implications of these results, we have attempted to identify and report on outliers amongst the
9 316 different countries. Further we recognise that, with this study having been conducted prior to
10 317 COVID-19, the responses to these questions might be different were this research conducted post
11 318 COVID 19.

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15 319 In conclusion, there are several clear messages that come out of this research.

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17 320 **Key findings:**

- 18 321 1. There is inadequate allergy training of PC providers at the undergraduate and postgraduate
19 322 level.
20 323 2. There is an overall lack in PC provider confidence in management of certain allergic
21 324 conditions, understanding the basic principles underpinning key allergy process and in
22 325 providing advice relating to anaphylaxis and adrenaline use.
23 326 3. There is variability across different European countries with regards to many aspects of
24 327 allergy training, confidence and management
25 328 4. While there is some awareness of local allergy guidelines for PC providers, there is minimal
26 329 awareness of EAACI guidelines across all countries.

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30 330 **Recommendations:**

- 31 331 1. Even though the confidence level primary care providers in some areas of allergic disease
32 332 management is high, the management of allergic diseases in primary care is suboptimal,
33 333 therefore strategies/educational opportunities and tools to support primary health care
34 334 providers across the spectrum of allergic diseases management should be developed.
35 335 2. Specific guidelines for the management of allergic conditions by PC providers need to be
36 336 developed and disseminated across the different PC provider groups, including allied health
37 337 care providers.
38 338 3. Any guidelines for PC providers need to be developed under the assumption that many PC
39 339 providers will not have received allergy training or are lacking in adequate confidence to
40 340 treat the full spectrum of allergic conditions.
41 341 4. Any guidelines pertaining to primary care need to include representatives of primary care
42 342 who have better knowledge of care barriers than many of their specialist colleagues
43 343 5. A country-specific approach is the key to the dissemination of allergy guidelines for PC
44 344 providers.
45 345 6. EAACI needs to work with National Societies to instil the need to utilise any globally
46 346 developed guidelines for PC providers and for them to be incorporated into undergraduate
47 347 curricula across Europe as a minimum standard of health education
48 348 7. Service development should include increased clinical provision coupled with research to
49 349 identify optimum means of providing effective and cost-effective approaches to managing
50 350 allergic diseases in PC settings, including upskilling of GPs and use of telemedicine for
51 351 screening/risk stratification running by a GP with a specialist with an interest in allergy,
52 352 linked to a regional allergy service for specific queries

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8. Short courses and practical training in allergy units for example in skin prick testing and immunotherapy could be considered to gain the necessary skills to then evolve into hub and spoke models with agreed quality standards of care across care settings.
 9. EAACI or another provider could consider a bespoke exam and certificate of competence for primary care which would be based on theoretical knowledge and include a practical course which could be at local allergy centres thus improving relationships locally and there could be a register or map of interested primary care workers referring into and supporting specialist units
 10. At this time it is critical that EAACI take leadership in supporting the role of primary care providers in the management of allergic diseases. This involves not only the establishment of training frameworks, competency standards and practice-based tools, but the development of care pathways which support primary care providers, across the spectrum of professions to better identify, triage and refer patients with allergic disease to appropriate care.

20 366 **CONCLUSIONS:**

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The management of allergic conditions in primary care is complex and while important role of primary care is recognised at the highest of levels, GPs lack confidence in the full breadth of allergic disease management. Training in allergic diseases at undergraduate and postgraduate levels needs to be provided. Given the rapidly changing face of allergic diseases, this survey has enabled us to identify what the educational priorities of GPs are and how they would like to have them met. In the post COVID era many aspects of education are now being delivered and designed on online interactive platforms and this medium lends itself well to primary care workers. If, as has been acknowledge, the time to address the significant gaps in the management of allergic conditions is now critical, the solutions must involve primary care providers, who are currently unsupported and sub-optimally equipped to address these challenges.²⁸ A strategy for primary care providers in the management of allergic conditions is needed now.

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FIGURE LEGENDS

- 467 **FIGURE LEGENDS**
468 Figure 1: Proportion of responders and allergy-related education received.
469 Figure 2: Proportion of responders' aware of local general practitioner (GP) referral guidelines and
470 EAACI competencies framework.
471 Figure 3: Proportion of responders and reasons for referral to an allergist.
472 Figure 4: Proportion of responders' and reasons not to referring to an allergist.
473 Figure 5: Proportion of responders with access to allergy management resources.
474 Figure 6. Proportion of responders' learning and assessment preference.
475 (country names identified by colours).

APPENDICES

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477 **APPENDICES**
478 Supporting information are included in separated excel files.

DATA AVAILABILITY STATEMENT

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480 **DATA AVAILABILITY STATEMENT**
481 The data that supports the findings of this study are available in the supplementary material of this
482 article.
483

AUTHOR CONTRIBUTIONS

484 **AUTHOR CONTRIBUTIONS**
485 All the authors are members of the EAACI Working Group on Primary Care
486 The Task Force on Allergy Educational Needs in Primary Care conceived and designed the study
487 protocol. MC, DR, EA, BF, RG, LL, SB and PD developed the concept. MC, DR, EA performed literature
488 search and assessed study detail. MC, DR, EA, BF, LL, RG, NL contributed to acquisition of data. JMCR
489 and MC checked data quality. MC, DR, EA, BF, LL and RG contributed to interpretation of results. MC,
490 DR and SB wrote the first draft of the manuscript, which was critically revised by all the other
491 authors. All authors approved the final version of the manuscript.

CONFLICTS OF INTEREST

492 **CONFLICTS OF INTEREST**
493 Dr. Cabrera: EAACI financial supported the program.
494 Dr. Ryan reports personal fees from Regeneron, personal fees from AZ, personal fees from Novartis,
495 personal fees from MEDA, personal fees from GSK, personal fees from Medscape, outside the
496 submitted work; and Board member Primary Care Interest Group, EAACI. Respiratory Effectiveness
497 Group Vice-President. Member All Party Parliamentary Group, Respiratory Health, UK Parliament.
498 Dr. Angier has nothing to disclose.
499 Dr. Laura Losappio has nothing to disclose
500 Dr. Purushotam has nothing to disclose.
501 Dr. Flokstra - de Blok has nothing to disclose.
502 Dr. Gawlik has nothing to disclose.
503 Dr. Bosnic-Anticevich reports grants from TEVA, personal fees from TEVA, personal fees from TEVA,
504 personal fees from AstraZeneca, personal fees from AstraZeneca, personal fees from Boehringer
505 Ingelheim, personal fees from Boehringer Ingelheim, personal fees from GSK, personal fees from
506 Sanofi, personal fees from Mylan, outside the submitted work.

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3 **Current allergy educational needs in primary care. Results of the EAACI working**
4 **group on primary care survey exploring the confidence to manage and the**
5 **opportunity to refer patients with allergy.**
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8 **TABLES**
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For Peer Review

Table 1: Responder Characteristics

Characteristic			n	%
Age Group (categorized)		18 - 24	3	0.4
		25 - 34	127	18.4
		35 - 44	187	27.1
		45 - 54	189	27.4
		55 - 64	151	21.9
		65+	32	4.6
		Total	689	100
Gender		Female	483	70.1
		Male	206	29.1
		Total	689	100
Country of Employment (Europe)		Yes	684	99.3
		No	5	0.7
		Total	689	100
Qualification	GPs Current employment	GPs	468	67.9
		GPs with a special interest	34	4.9
		General medical specialist	31	4.5
	Nurses (current employment)	Primary Care Nurse	16	2.3
		General Nurse	6	0.9
		Allergy Specialist Nurse	11	1.6
	Other	Dietician	28	4.1
		Pharmacist	2	0.3
Further Specialist Qualification		MD	565	82
		Nursing diploma	56	8.1
		Pharmacist	4	0.6
		Other	62	9
Language		English	348	50.5
		Other (List of the four more language versions)	341	49.5
		Total	689	100
GPs main employer		State or District Health System	470	75.6
		Private	77	12.4
		University, collage or equivalent	14	2.3
		Retired	2	0.3
		Other	59	9.4

Table 2. Self-perceived knowledge levels of confidence and educational needs

Condition	Reported confidence				UK n=241	Spain n=104	The Netherlands n=52	Poland n=41	Italy n=75
	n	Median (IQR)	Adequate%	Inadequate%	Median (IQR)				
Rhinitis/Asthma	532	4 (4,5)	83.3	16.7	4 (4,5)	4 (4,5)	4 (4,5)	4 (4,5)	4 (3,5)
Eczema/atopic dermatitis	530	4 (3,5)	66.4	33.6	4 (3,5)	4 (3,5)	4 (4,5)	4 (3,4)	4 (3,5)
Anaphylaxis	503	4 (4,5)	78.7	21.3	5 (4,5)	4 (4,5)	4 (4,5)	4 (4,5)	3 (2,5)
Contact dermatitis	528	4 (3,4)	61.2	38.8	4 (3,4)	4 (3,4)	4 (3,4)	3 (3,4)	4 (3,5)
Drug reaction/allergy	525	3 (3,4)	43.4	56.6	3 (2,4)	3 (3,4)	3 (3,4)	3 (3,4)	3.5 (2,5)
Urticaria/Angioedema	531	4 (3,5)	68.5	31.5	4 (3,5)	4 (3,5)	4 (4,5)	4 (4,4)	4 (3,5)
Food allergy	538	3 (3,4)	40.7	59.3	3 (3,4)	3 (3,4)	3 (2,4)	3 (3,4)	3 (3,4)
Latex allergy	502	3 (2,4)	32.9	67.1	3 (2,4)	3 (2,4)	3 (3,4)	3 (2,3)	3 (2,4)
Occupational allergy	490	3 (2,3)	23.5	76.5	3 (2,3)	3 (2,3)	3 (3,3)	3 (2,4)	3 (1,4)
Venom Allergy	453	3 (2,4)	37.3	62.7	2 (1,4)	3 (2,4)	4 (3,4)	4 (3,4)	3 (2,4)

Perceived confidence levels of 4 or 5 were categorised as "Adequate"; 1, 2 or 3 were categorised as "Inadequate".

Table 3. Preferred methods of learning and assessment.

Age	Preference ratio (Traditional: e-learning)	E-platform by order of preference
18-24	100:0	Smartphone = Table = computer
25-34	59:41	Computer>Smartphone>Table
35-44	48:52	Computer>Smartphone>Table
45-54	48:52	Computer>Tablet>Smartphone
55-64	66:34	Computer>Tablet>Smartphone
+65	73:27	Computer>Tablet>Smartphone
TOTAL	55:45	Computer>Tablet>Smartphone

For Peer Review



Budget notification letter

Martha Cabrera Sierra
cc Bertine Flokstra – de Blok
Educational needs in Primary Care
26/11/2019

Dear Martha Cabrera Sierra,

During the last EAACI Executive Committee meeting, which took place in Zurich on 15-16 November 2019, all budget proposals received for 2020 were reviewed.

The EAACI Board of officers and Executive committee strongly support scientific activities and would like to thank you for your work and contributions concerning the submitted proposals for next year.

During the meeting, all applications were evaluated and scored by the full ExCom Committee. Final decisions were made based on the scientific quality of the applications, their impact into the EAACI community, and available budget. In view of the high number of proposed activities, unfortunately not all proposals could be supported for 2020.

Please find below the approved decision for your project in 2020:

Budget Code	Project	Budget Approved	Decision
402311	Educational needs in Primary Care	5,000 EUR	Accepted

Please note that your associated sections/interest group/working groups chair and secretary have been informed separately.

Do not hesitate to contact us if you have any questions concerning these decisions (science@eaaci.org).

Yours sincerely,

Marek Jutel
EAACI President

Liam O'Mahony
EAACI Treasurer

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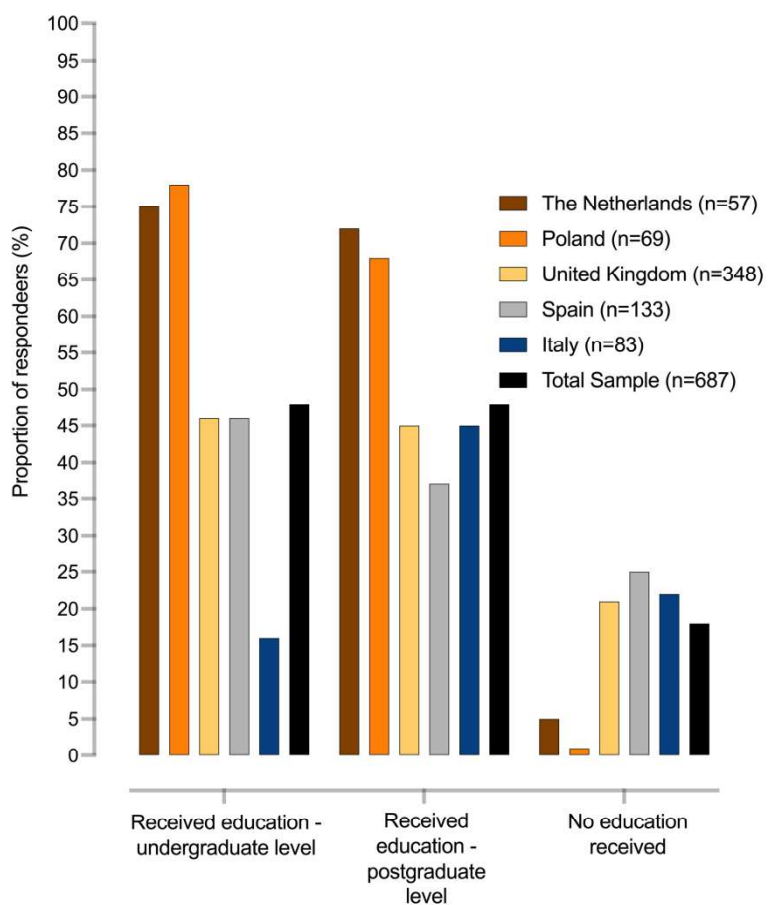


Figure 1_Cabrera et al.

493x613mm (150 x 150 DPI)

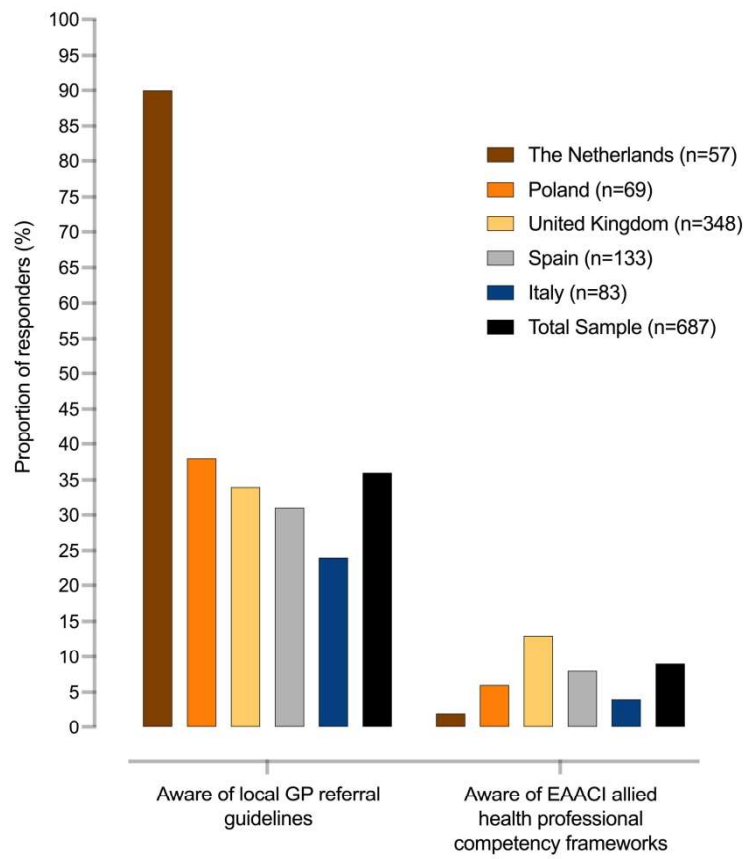


Figure 2_Cabrera et al.

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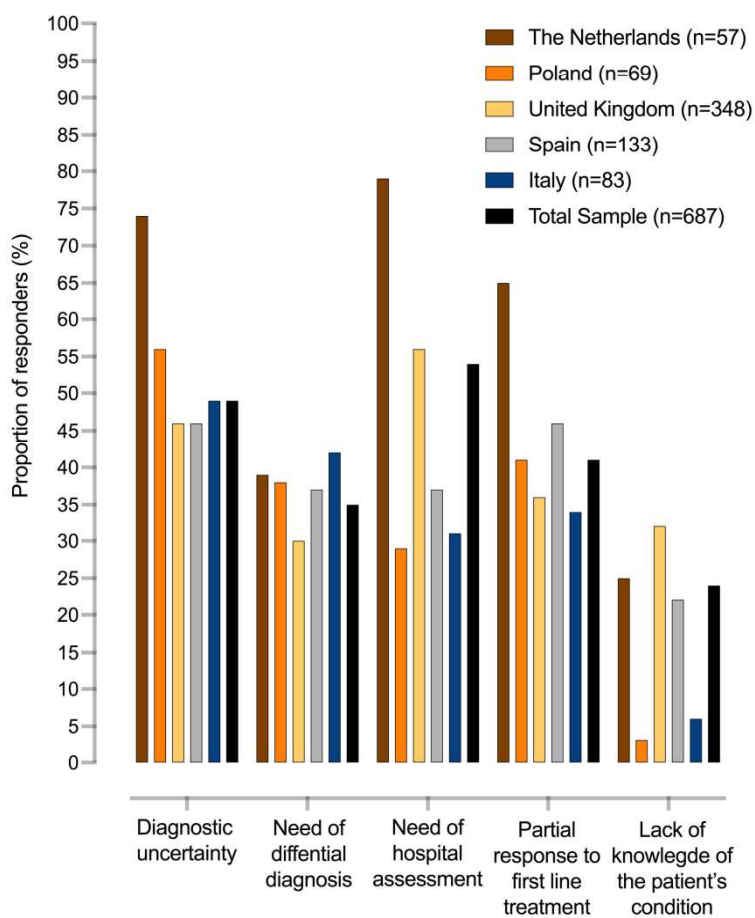


Figure 3_Cabrera et al.

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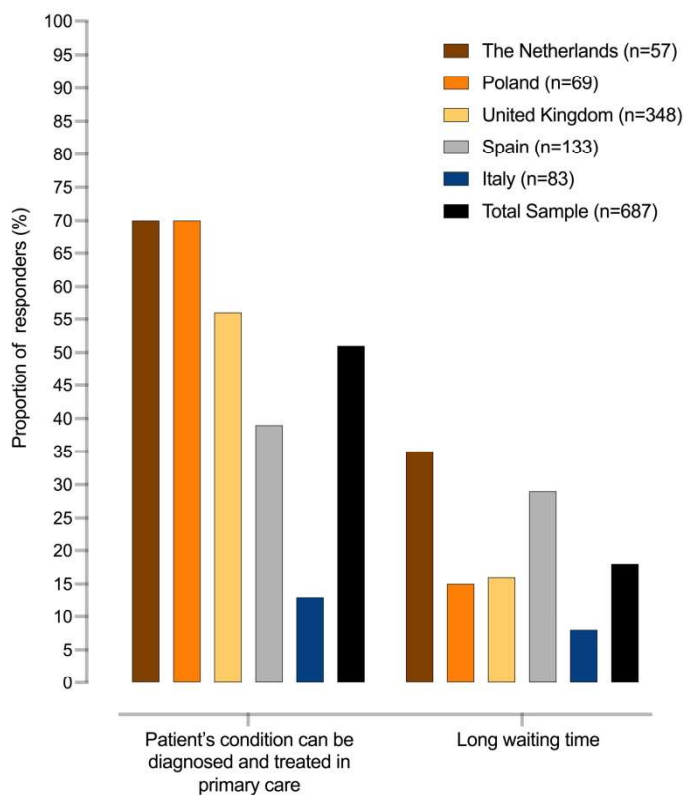


Figure 4_Cabrera et al.

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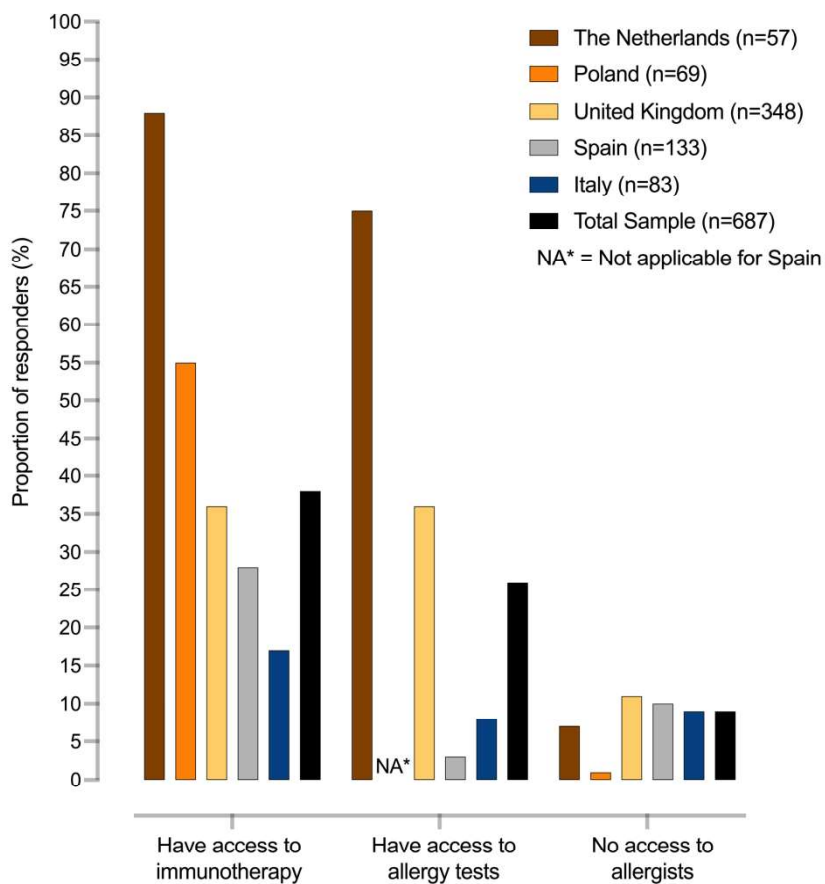


Figure 5_Cabrera et al.

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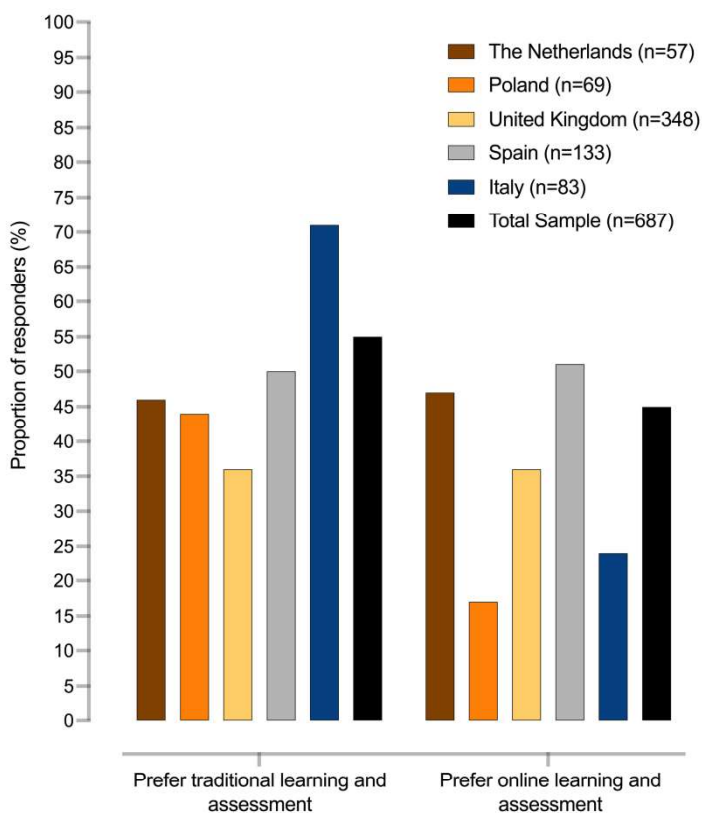


Figure 6_Cabrera et al.

493x642mm (150 x 150 DPI)