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Refereed paper

Revisiting the concept of 'chronic disease' from the perspective of the episode of care model. Does the ratio of incidence to prevalence rate help us to define a problem as chronic?

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for the Transition Project

ABSTRACT

Background This is a study of the epidemiology of acute and chronic episodes of care (EoCs) in the Transition Project in three countries. We studied the duration of EoCs for acute and chronic health problems and the relationship of incidence to prevalence rates for these EoCs.

Method The Transition Project databases collect data on all elements of the doctor–patient encounter in family medicine. Family doctors code these elements using the International Classification of Primary Care. We used the data from three practice populations to study the duration of EoCs and the ratio of incidence to prevalence for common health problems.

Results We found that chronic health problems tended to have proportionately longer duration EoCs, as expected, but also a lower incidence to prevalence rate ratio than acute health problems. Thus, the incidence to prevalence index could be used to define a chronic condition as one with a low ratio, below a defined threshold.

Conclusions Chronic health problems tend to have longer duration EoCs, proportionately, across populations. This result is expected, but we found important similarities and differences which make defining a problem as chronic on the basis of time rather difficult. The ratio of incidence to prevalence rates has potential to categorise health problems into acute or chronic categories, at different ratio thresholds (such as 20, 30 or 50%). It seems to perform well in this study of three family practice populations, and is proposed to the scientific community for further evaluation.

Keywords: electronic medical record, electronic patient record, epidemiology, episode of care, family medicine, general practice, incidence, International Classification of Primary Care (ICPC), longitudinal, Malta, prevalence, Serbia, The Netherlands, transition project

Introduction

The development of family medicine (FM, synonymous with general practice) as a clinical speciality and an academic discipline is informed and enhanced by the collection of empirical longitudinal data from routine clinical practice. The study of the epidemiology of FM using electronic medical record (EMR) databases is a classic example, empirically measuring the content of actual practice and informing the domains of research, education, policy planning and clinical practice.[1,2]

The International Classification of Primary Care (ICPC) acts as an ordering principle for FM data, allowing for direct comparisons, and also has the appropriate granularity for primary care studies.[3,4] The use of the episode of care (EoC) data model[3,4] allows for increased precision in calculating incidence and prevalence rates.[2,5] In the Transition Project, such data have been collected with ICPC in the Netherlands, Japan, Poland, Malta, Serbia and other countries[6–10] from the daily practice of a cohort of family doctors (FDs) using similar methodology over a period of 1 to 11 years. These data allow the calculation of incidence and prevalence rates per 1000 patient years of observation in a population, this being a controlled denominator independent of consultation rates. The datasets from the Netherlands, Malta and Serbia have been used for this study because they are available and validated, recent and overlap in time.[5]

At a recent European General Practice Research Network (EGPRN; www.egprn.org) conference on chronic disease in FM, at Nice in France, it was clear that there is no international consensus definition as to what is, and what is not, a chronic disease. As a lay example of this issue, the *Concise Oxford English Dictionary* definition is also rather vague, defining chronic (illness) as: 'persisting for a long time or constantly recurring' (p. 255).[11]

The definition in the International Epidemiological Association's *A Dictionary of Epidemiology* is also non-specific, referring to a 'health-related state' or an 'exposure' which is described as: '... lasting a long time' or '... prolonged or long term', respectively (p. 39)[12] but then also referring to the United States Centre for Health Statistics as defining such a period as of 'three months' duration or longer'.[12]

The World Organisation of Family Doctors' (Wonca) *International Dictionary for General/Family Practice* is more specific, and defines the term 'chronic' with a defined time: 'relating to an illness or disability lasting 6 months or longer'.[13]

Such a time-framed definition would, however, exclude conditions or health problems which do last six months or more (or three months or more), but which might not be considered an illness, or to cause disability, such as mild spina bifida occulta, asymmetry of the pupils, repeated consultations for smoking prevention, monitoring of borderline lipid levels or contraception.

We used data available from the Transition Project databases to investigate the duration of health problems (EoC) in international primary care, and to look for an empirical quantitative index of chronicity appropriate for the domain of FM. We consider that the increased precision of incidence and prevalence rates afforded by the use of ICPC in an EoC data model would provide new perspectives on chronic disease and health problems.[5]

The research question of this study is: 'What are the similarities and differences in the duration of episodes of care in different countries?'

During the course of the study, we observed and hereby describe an interesting phenomenon related to the ratio of incidence to prevalence rates for acute and chronic illnesses.

Method

The public-domain EMR TransHis (short for Transition Project Health Information System),[14] designed for use with ICPC, was used to collect data from participating FDs who recorded details [reason(s) for encounter, diagnosis(es) and intervention(s)] of all their patient contacts in an EoC structure using ICPC. Reasons for encounter presented by the patient, all FD interventions and the diagnostic labels recorded for each encounter were classified using ICPC (ICPC-2-E in Malta and Serbia, ICPC-1 in the Netherlands). Data for all encounters (face-to-face encounters in the office and at home, telephone consultations, repeat prescriptions, etc.) were analysed to obtain complete data on incidence and prevalence, including for patients presenting only for a repeat prescription.

An EoC is defined as a health problem from its first presentation by the patient to the FD, until the completion of the last encounter for it. It encompasses all contact elements related to that health problem. Its name (i.e. the diagnostic label of the EoC) may be modified over time, and in this article we refer to it as the episode title. The last diagnosis made during an EoC is the current episode title.[4]

The databases encompass a defined period: an average of 9896 patients and 43 577 patient years of observation over five years in Malta (2001–2005), 15 318 patients and 158 370 patient years over 11 years in the Netherlands (1995–2005), 72 673 patient years over 1 year in Serbia (2003). The practice populations in the Netherlands and Serbia represent registered patient populations (for Serbs only those over 15 years of age), whilst the population in Malta represents patients consulting over a five-year period. The databases were analysed using a one-year data-frame over the whole available observation period to calculate incidence and prevalence (according to the standard approach), but longer time frames were used to study the duration of EoCs (four years for the Dutch database and five years for the Maltese). An EoC open over a number of years of observation would be recoded as rest-prevalent (to distinguish it from new) in subsequent data frames (one, four or five years, as appropriate), but only for those years when a consultation for that same EoC occurred.

The databases were used to calculate incidence and prevalence rates for EoCs. Rates are presented as number of observations per 1000 person (patient) years of observation. A patient-year starts at the beginning of an observation frame or when a patient registers in the practice, and is closed when the patient leaves the practice for any reason, including death. In the case of Malta, where patients are not registered with the FD, but tend to see the same FD for most, but possibly not all, healthcare problems, a patient-year was opened when a patient presented to the FD for an encounter. Any patients in the Maltese database who did not consult in the observation period of five years did not contribute to the denominator.

Incidence rates in this study give the rate of an observation in new EoCs, i.e. at the first encounter at the start of a new EoC, per 1000 patient years of observation. Prevalence rates give the rate of an observation in all EoCs, both incident and rest-prevalent considered together, in that period of observation. Rest-prevalent EoCs represent a health problem that is not new, but has presented during that period of observation for follow-up.

A patient can have more than one new EoC for the same diagnosis during an observation period (say two separate EoCs for bronchitis in one year). However, software error trapping prevents the coding of a new EoC for the same chronic health problem in one patient, to prevent erroneous double coding of defined chronic problems. Rates of EoCs were standardised to the European Union standard 25 country population (EU25 population, 2005)[15] to adjust for age and sex differences in the practice populations under study. The practice populations were treated as defined populations, and not as samples of a larger population because they are not random samples of a defined geographical population. As such, confidence intervals for a population 'estimate' were inappropriate.

The EoCs studied were those which described the 20 most prevalent EoCs in each of the three populations under study, as published previously.[5] The duration of selected EoCs was calculated using the standard approach in the Episodes of Care in Family Practice (EFP) program,[9] but using a more recent database. The EoCs analysed in Table 1 were selected as examples of acute and chronic conditions, and the trends observed are typical of other acute and chronic conditions in the database (data available in EFP). The duration of an EoC

Table 1 The percentage of new episodes of care lasting one day and lasting six months or less, for a selection of health problems exemplifying acute or chronic disorders. Columns list ICPC rubric and label, and percentage of episodes of care lasting one day or six months in the Dutch population (four year data frame, Nl 4 yr), Maltese population (5 year data frame, Mt 5 yr) and Serb population (1 year data frame, Sb)

	Nl 4 yr	Mt 5 yr	Sb
	% of new episodes lasting one day		
R74 – upper respiratory tract infection	85.7	93.4	57.1
R76 – acute tonsillitis	76.8	90.2	60.7
R96 – asthma	26.2	63.9	18.2
K86 – uncomplicated hypertension	7.9	41.8	18.5
K77 – heart failure	11.7	63.4	19.7
P76 – depressive disorder	21.8	53.1	22.6
	% of new episodes lasting six months or less		
R74 – upper respiratory tract infection	97.5	98.6	85.1
R76 – acute tonsillitis	98.2	98.3	89.0
R96 – asthma	44.1	75.2	42.5
K86 – uncomplicated hypertension	17.5	57.2	44.0
K77 – heart failure	36.2	80.0	48.7
P76 – depressive disorder	50.5	70.8	60.0

is the period (in days) from the first to the last encounter for that same problem in that patient. The incidence to prevalence ratio was a simple mathematical ratio (equivalent to the incidence rate divided by the prevalence rate) expressed as a percentage and the mean ratio was the simple unweighted mean of the three population rate ratios.

Ethical considerations

The study did not involve the collection of new data. Ethical approval was applied for locally, when appropriate, for individual studies based on these data in the Netherlands, Serbia and Malta.

Results

Table 1 gives the proportion (percentage) of EoCs which last only one day, compared with those which last six months or less, for selected acute and chronic EoCs. For the two exemplar acute health problems, namely upper respiratory tract infection (R74) and acute tonsillitis (R76), the majority of EoCs had a duration of only one day (percentage ranges from 57.1% for R74 in Serbia to 93.4% for R74 in Malta), and more than 85% had a duration of up to six months, in all three populations. By contrast, for the four exemplar chronic health problems, namely asthma (R96), hypertension (uncomplicated, K86), heart failure (K77) and depressive disorder (P76), the percentage of EoCs which lasted only one day was much smaller in all three populations, ranging from 7.9% for K86 in the Netherlands to 63.9% for R96 in Malta. The proportions of EoCs lasting six months or less was also much lower than that for acute health problems in all three populations, ranging from 17.5% for K86 in the Netherlands to 80.0% for K77 in Malta. The proportion of EoCs lasting six months or less was 80.0% or less for all the chronic problems, whilst for both acute disorders this proportion was 85.1% or more. EoCs for these chronic health problems in Malta appeared to last less than in the Netherlands and Serbia, with higher proportions of such EoCs lasting only one day in the Maltese population.

Table 2 gives the incidence to prevalence rate ratio for the 20 most common distributions of EoCs in the three populations.[5] Mean incidence to prevalence rate ratios ranged from 9.0% (for complicated hypertension, K87) to 85.7% (for excessive ear wax, H81, and gastroenteritis, D87), but some ratios lay outside even this wide range, in one or more populations. Health problems classically described as chronic had lower incidence to prevalence rate ratios, both in individual populations and on average: 11.8% for uncomplicated hypertension (K86, unweighted mean of three populations), 15.0% for type II diabetes mellitus (T90,

Table 2 The ratio of incidence to prevalence rate for the twenty commonest ICPC episode titles[5] in three populations. Columns list ICPC code, ICPC label, prevalence and incidence rates in the Dutch, Maltese and Serb practices respectively (standardised for the EU 2005 population),[15] the ratio of incident to prevalent episodes of care for that ICPC code in each population, and the mean incidence to prevalence ratio in the three populations (un-weighted mean of previous three columns). Those ICPC rubrics which are below an incidence to prevalence threshold ratio cut-off of 20%, 30% and 50%, respectively, are divided into boxes

		The Netherlands		Malta		Serbia		Incidence/Prevalence rate ratio (Standardised EU 2005)				
Code	Label	Prevalence	Incidence	Prevalence	Incidence	Prevalence	Incidence	The Netherlands	Malta	Serbia	Mean	
K87	Hypertension complicated	10.9	0.5	6.2	0.3	15.3	2.7	4.6%	4.8%	17.6%	9.0%	
K86	Uncomplicated hypertension	79.2	5.5	59.9	6.2	79.8	14.4	6.9%	10.4%	18.0%	11.8%	
W11	Family plan/oral contraceptive	93.7	13.1	–	–	–	–	14.0%	–	–	14.0%	
T90	Diabetes non-insulin dependent	33.3	4.3	28.8	4.5	19.9	3.3	12.9%	15.6%	16.6%	15.0%	
K74	Ischaemic heart dis with angina	16.0	2.8	7.9	1.9	14.0	2.6	17.5%	24.1%	18.6%	20.0%	Threshold 20%
R96	Asthma	40.4	6.5	35.7	10.7	3.5	0.7	16.1%	30.0%	20.0%	22.0%	
D85	Duodenal ulcer	3.5	0.6	0.3	–	26.2	8.6	17.1%	–	32.8%	25.0%	
P74	Anxiety disorder/ anxiety state	8.9	2.0	18.3	4.2	44.3	14.7	22.5%	23.0%	33.2%	26.2%	
R79	Chronic bronchitis	2.5	0.5	2.0	0.7	14.5	3.5	20.0%	35.0%	24.1%	26.4%	
K77	Heart failure	14.9	3.6	10.4	3.9	10.2	2.0	24.2%	37.5%	19.6%	27.1%	
P76	Depressive disorder	36.9	10.2	25.8	7.5	7.1	1.8	27.6%	29.1%	25.4%	27.4%	Threshold 30%

Table 2 Continued

Code	Label	The Netherlands		Malta		Serbia		Incidence/Prevalence rate ratio (Standardised)				
		Prevalence	Incidence	Prevalence	Incidence	Prevalence	Incidence	The Netherlands	Malta	Serbia	Mean	Standardised EU 2005
K80	Cardiac arrhythmia NOS	2.7	1.0	0.2	-	14.6	3.7	37.0%	-	25.3%	31.2%	
P06	Disturbances of sleep/insomnia	59.8	17.5	5.9	1.5	3.5	1.5	29.3%	25.4%	42.9%	32.5%	
L84	Back syndrome without radiat pain	5.4	1.3	2.8	1.3	39.7	11.8	24.1%	46.4%	29.7%	33.4%	
T93	Lipid metabolism disorder	41.4	7.9	28.8	11.4	14.9	8.6	19.1%	39.6%	57.7%	38.8%	
R97	Hayfever/allergic rhinitis	39.0	8.8	23.2	9.0	0.7	0.4	22.6%	38.8%	57.1%	39.5%	
P01	Feeling anxious/ nervous/tense	30.9	13.1	14.2	8.2	10.7	3.7	42.4%	57.7%	34.6%	44.9%	
L86	Back syndrome with radiating pain	24.9	13.1	14.7	8.5	32.0	9.6	52.6%	57.8%	30.0%	46.8%	
L83	Neck syndrome	7.1	2.5	4.4	3.4	30.8	9.1	35.2%	77.3%	29.5%	47.3%	
K85	Elevated blood pressure	17.0	8.2	9.9	7.2	30.1	6.8	48.2%	72.7%	22.6%	47.9%	Threshold 50%
P17	Tobacco abuse	7.7	4.5	21.3	1.5	7.3	6.5	58.4%	7.0%	89.0%	51.5%	

Table 2 Continued

D87	Stomach function disorder	19.4	7.8	11.3	7.6	16.9	8.4	40.2%	67.3%	49.7%	52.4%
L03	Low back complt excl radiation	56.9	41.7	3.7	2.8	4.7	2.0	73.3%	75.7%	42.6%	63.8%
A85	Adv effect med agent proper dose	36.9	31.6	24.0	17.5	0.2	0.1	85.6%	72.9%	50.0%	69.5%
S88	Contact dermatitis/other eczema	60.3	32.2	7.0	6.2	5.1	3.8	53.4%	88.6%	74.5%	72.2%
R75	Sinusitis acute/ chron	35.9	30.8	18.8	16.3	9.9	4.5	85.8%	86.7%	45.5%	72.7%
L18	Muscle pain	11.4	7.4	48.1	43.2	0.3	0.2	64.9%	89.8%	66.7%	73.8%
S74	Dermatophytosis	47.9	33.2	10.0	8.0	2.9	2.1	69.3%	80.0%	72.4%	73.9%
A98	Prevention	175.6	99.0	131.8	107.7	4.6	3.9	56.4%	81.7%	84.8%	74.3%
U71	Cystitis/other urin infect NOS	59.0	50.2	17.6	15.5	36.5	19.6	85.1%	88.1%	53.7%	75.6%
A04	General weakness/ tiredness	38.0	30.9	5.4	4.5	1.2	0.8	81.3%	83.3%	66.7%	77.1%
R78	Acute bronchitis/ bronchiolitis	48.2	41.3	41.7	40.0	44.9	23.0	85.7%	95.9%	51.2%	77.6%
R05	Cough	50.1	41.8	24.3	20.3	2.4	1.6	83.4%	83.5%	66.7%	77.9%
R74	URI (head cold)	52.4	49.2	177.3	174.1	92.5	44.6	93.9%	98.2%	48.2%	80.1%
R29	Respiratory symptom/ complaint other	0.7	0.6	22.2	21.3	0.5	0.3	85.7%	95.9%	60.0%	80.6%

Table 2 Continued

		The Netherlands		Malta		Serbia		Incidence/Prevalence rate ratio (Standardised)				
Code	Label	Prevalence	Incidence	Prevalence	Incidence	Prevalence	Incidence	The Netherlands	Malta	Serbia	Mean	Standardised EU 2005
R76	Tonsillitis acute	15.3	14.5	26.9	25.4	29.0	15.5	94.8%	94.4%	53.4%	80.9%	
R77	Laryngitis/ tracheitis acute	15.1	14.0	15.6	14.8	6.2	3.6	92.7%	94.9%	58.1%	81.9%	
A97	No disease	48.6	43.4	47.3	44.9	1.0	0.7	89.3%	94.9%	70.0%	84.7%	
R80	Influenza	9.6	9.4	22.8	22.3	2.0	1.2	97.9%	97.8%	60.0%	85.2%	
H81	Excessive ear wax	44.7	40.2	12.3	10.3	1.8	1.5	89.9%	83.7%	83.3%	85.7%	
D73	Gastroenteritis presumed infection	15.5	14.9	70.7	69.9	8.7	5.4	96.1%	98.9%	62.1%	85.7%	

including both type I and type II in ICPC-1, used in the Netherlands), 20.0% for ischaemic heart disease with angina (K74) and 9.0% for complicated hypertension (K87). Other health problems which might not be immediately considered as chronic also had low ratios, such as 14.0% for family planning (W11). One could arbitrarily define a threshold for the rate ratio. Were a line to be drawn at the 20, 30 or 50% level, different categories of health problems would be created, some of which would include chronic health problems such as asthma (R96, 22.0%), duodenal ulcer (D85, 25.0%), chronic bronchitis (R79, 26.4%), heart failure (K77, 27.1%), depressive disorder (P76, 27.4%), cardiac arrhythmia (K80, 31.2%), insomnia (P06, 32.5%), back syndrome without radiation (L84, 33.4%), lipid disorder (T93, 38.8%), allergic rhinitis (R97, 39.5%), feeling anxious (P01, 44.9%), back syndrome with radiation (L86, 46.8%), neck syndrome (L83, 47.3%) and elevated blood pressure (excluding hypertension, K85, 47.9%). Health problems with classically more acute presentations had higher incidence to prevalence rate ratios, such as cystitis (U71, 75.6%), upper respiratory tract infection (R74, 80.1%), acute tonsillitis (R76, 80.9%) and influenza (R80, 85.2%). Some health problems which might be considered chronic, or which included both acute and chronic cases, also had high incidence to prevalence rate ratios, such as tobacco abuse (P17, 51.5%), stomach function disorder (D87, 52.4%), contact dermatitis (S88, 72.2%), and sinusitis acute/chronic (R75, 72.7%). However, such ratios did appear lower in individual populations for some of these health problems.

Discussion

Principal findings

We analysed the percentage of EoCs for selected common problems which last for one day or for up to six months, and the ratio of incidence to prevalence rates for a distribution of the 20 most common problems seen by the FD in three FM populations.

We found that the selected chronic problems had proportionately more EoCs which lasted longer than six months, when compared to the selected acute problems. Such findings are typical for the data we have collected, and we have presented only some examples. The proportion of acute and chronic problems which lasted one day, or six months or less, varied between populations. However, 80% or fewer EoCs for chronic problems lasted for at least six months, whereas 85% or more of acute problems lasted for up to six months, across all three populations. The variability in the duration of EoCs for these health problems between countries represents a challenge for defining a cut-off period for classifying a problem as chronic in international FM.

The ratio of incidence to prevalence rates was found to be a useful indicator of acute as against chronic categorisation of a health problem. Health problems with a low rate ratio tended to be chronic, and this was consistent with the percentage of such EoCs which lasted for one day or up to six months, described above. By contrast, acute problems tended to have a higher incidence to prevalence rate ratio, and a higher proportion of such EoCs lasted for only one day. Chronic health problems thus tended to have a lower incidence to prevalence rate ratio than acute health problems.

This study describes a new empirical index of chronicity, namely the ratio of incidence to prevalence rates.

Implications of the findings

The incidence to prevalence rate ratio could be used as an index to define a chronic condition as one with a low ratio, below a defined 'cut-off' threshold level and independent of a specific duration period. Thresholds of 20, 30 or 50% would identify different sets of conditions as chronic, and others as not.

Comparisons with the literature

As discussed above, current definitions of the chronicity of a health problem or a disability[11–13] tend to be either too vague or too specific. Defining a chronic problem on the basis of a defined period may be useful for epidemiological purposes and for defining cases in clinical practice, but it has its limitations due to variability in the mean duration of EoCs in different healthcare systems. EoCs of chronic disease or health problems may last for less than six months, for example, due to poor follow-up or patient default. Using a shorter or longer cut-off period may partly address this issue, but does not fully address the issue of the individual patient with a disease at its first presentation. Newly incident diabetes in a patient may be described as a chronic disease because the condition is likely to be life-long. In this case, it is the *mean* duration of the illness or disability which is useful in defining it as chronic or acute. However, the mean duration of EoCs varies in different settings.

The use of an index such as the ratio of incidence to prevalence rates, rather than a defined period, has the advantage of allowing one to define a threshold on the basis of the presentation of the problem. If a health problem is more often manifest as a follow-up for a pre-existing healthcare issue, rather than as an inci-

dent problem, this will affect the ratio. This has the attraction of avoiding an arbitrarily defined period. Additionally, it allows use of the incidence to prevalence rate ratio as a measure of the 'degree of chronicity', allowing comparisons between healthcare problems in clinical practice. In this sense, it also is useful in examining the pattern of presentation of the problem to healthcare services, and the type of burden of disease that the problem presents to the patient and the health care system.

For example, one may comment on the fact that back problems with a defined disease label diagnosis, such as 'back syndrome' with or without radiation (L86 and L87 respectively in ICPC), had a lower mean rate ratio (46.8 and 33.4%, respectively), than EoCs for the symptom diagnosis 'low back pain' not classified with a disease label diagnosis (63.8%). The rate ratio for heart failure (K77) was 27.1% (ranging from 19.6% in Serbia to 37.5% in Malta), which is a better indicator than the data on the proportion of EoCs for K77 lasting up to six months in Table 1. The number of cases of heart failure lost to follow-up in Malta, due to healthcare system effects, may have an impact on EoC duration data, but the incidence to prevalence rate ratio may be a better indicator of the nature of the health problem over time.

Limitations

This was a study of data structured using EoCs, and not episodes of illness, in the community. The data on the actual prevalence and incidence of illness in the community were not available, due to the study being based at a practice population level, on actual consultations with the FD.

The use of the EoC data model allows more precise estimates of incidence and prevalence, which is a strength.[3,5] However, many information systems may not allow EoC coding, or may not allow easy analysis of diagnostic data structured in EoCs even though the datum may be coded. Thus, replicating this study may be challenging in other settings and with other datasets.

This is a preliminary study of the incidence to prevalence index, and the indicator must be further tested in other datasets and other populations, before it is widely used. The implications of a high or a low index ratio must also be further understood, and their application to patient care further studied.

Strengths

The fact that the EMR TransHis guides and supports the doctor during coding, providing ICPC coding criteria and software error trapping, improves the quality of the data collected, which in turn improves its reliability. The software and classification system provide data which allow the calculation of precise incidence and prevalence rates of EoCs in these primary care populations from these three countries. The use of an EoC model corrects for diverse artefacts of observation, including the effect of multiple consultations for the same problem, and this allows the correct interpretation of multiple incident episodes in one individual in a defined period of observation.

Other artefacts, such as the paradoxical increase in incidence in the very old (over 85 years of age) due to high mortality rates, are adjusted for by the accurate patient year denominator in this project. These qualities of these databases are a substantial strength, which supports the conclusions of this study.

Call for further research

More research in this area, on different datasets, would allow an optimum threshold to be defined to categorise disorders into those with a more chronic, more acute, and intermediate pattern of presentation on the basis of ratios of incident to prevalent EoCs.

Conclusions

The duration of EoCs for acute and chronic health problems varies between the populations studied. Nevertheless, chronic health problems tended to have longer duration EoCs, proportionately, across populations. This is to be expected, but we found important similarities and differences. This observation makes the definition of a temporal cut-off for defining a health problem as chronic rather problematic at an international level.

We found that the ratio of incidence to prevalence rates has potential to categorise health problems into acute or chronic categories, at different ratio thresholds (such as 20, 30 or 50%). It seems to perform well in this study of three FM practice populations, and is proposed to the scientific community for further evaluation.

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CONFLICTS OF INTEREST

None

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