The role of gynaecologists in the years of demographic, political and economic crisis: the Greek aspect

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Abstract

Introduction

It is widely spread that History teaches the next generations, while every single generation contributes significantly to the enrichment of this valuable store of knowledge. Greece is facing the epoch of political-economic declination; a fact with great impact on demographic parameters (mean life-expectancy, Malthusian parameter $r$ of the Exponential Law in population dynamics, entropy-reproductive potential of population). The aim of this review was to support the essential role of contemporary gynaecologists against current demographic shrinkage.

Materials & Methods

We searched the web, looking for articles concerning history of nations and low birth rate. Historical proportionality was our main tool in selecting and distributing our results, as well as in extracting conclusions. Descriptive statistics was applied, followed by sequence analysis, association rules, grouping and forecasting.

Results

In classical Sparta, the alarming decline of Spartan citizens, as commented by Aristotle (384–322 BC), was one of the major factors, which led to the decline of the Polis during the following Hellenistic and Roman Age. In his work on the rise of the Roman Republic and its gradual domination over Greece, Polybius (200–118 BC) cites the phenomenon of low birth rate, population decrease, subsequent agricultural decline and city desertion in Greece, attributing them to Fortune (Tyche). We studied that plagues and low birth rate among Roman citizens led to depopulation in the Empire and in order this to be combated, Barbarian tribes were actually welcomed into the Empire and encouraged to "set up shop" (as famous author and historian Will Durant states, 'An Empire is not conquered from without, until it has fallen from within'). On the other hand, several modern articles have attributed the EU economic crisis to low birth rate (e.g. an article from the Head of Vatican bank).

Conclusion

Historical proof of low birth rate leading as a factor to the catastrophe of a state is abundant. We, as gynaecologists, could decelerate and maybe reverse this decline in births by informing properly our population on their fertility options, by combating the unnecessary abortions (by launching campaigns for parents, schools and media) and finally, by cultivating a positive attitude towards immigrants to Greece, as they can contribute significantly to the recovery of our wounded economy. Such actions may protect our nation from the Malthusian Catastrophe, as it was prophetically described by Thomas Malthus and published in the "An Essay on the Principle of Population" in 1798.

Introduction

In 18th-century Europe, a British scholar, named Thomas Robert Malthus (1766–1834), published his work on political economy and demography and particularly on population dynamics. He introduced a simple exponential growth model, which is an exponential growth based on a constant rate of compound interest (formula: $P(t) = P_0e^{rt}$, $P_0$ = initial population, $r$ = growth rate or Malthusian parameter, $t$ = time). In his "An Essay on the Principle of Population" he described the demographic expansion and shrinkage in response to various factors, presenting in a very thorough and deterministic way to the world the behaviour of this system1. The Malthusian Catastrophe (or check) was the cornerstone in his studies, dealing with the forced return to subsistence-level conditions once population growth has outpaced agricultural production2. Of course, those concepts, which Malthus used to describe his theoretical models, have to be interpreted carefully within their concurrent feudalistic reality, originated initially from the medieval years, and can then be proportionally adjusted in our contemporary industrialised and atomic epoch. As nowadays capitalism seems to have replaced entirely the feudalism of Medieval Europe and moreover, the "capital" (like the "land", in the corresponding medieval prevalent economical model) is actually concentrated in the positive financial balance of various companies, resources have already become rarer and the growing population struggles for its survival, with the latter to be a direct result of the above-mentioned Malthusian calculation. Wars, crisis,
crimminality, starvation, diseases, low birth rate all are straightforward results of the deprivation of resources, like oil, natural gas, minerals, food, and others.

In 1798, Malthus wrote in his essay: “The power of population is so superior to the power of the earth to produce subsistence for man that premature death must in some shape or other visit the human race. The vices of mankind are active and able ministers of depopulation. They are the precursors in the great army of destruction, and often finish the dreadful work themselves. But should they fail in this war of extermination, sickly seasons, epidemics, pestilence, and plague advance in terrific array, and sweep off their thousands and tens of thousands. Should success be still incomplete, gigantic inevitable famine stalks in the rear and with one mighty blow levels the population with the food of the world”.

The above words could be considered as certain confirmation for mankind’s past history as well as a valid prophecy for various subsequent historical events, like the Age of Enlightenment, the Revolutions of 1848, the First and the Second World War and the current global economic recession. But can contemporary nations resist and reverse this inevitable consequence and protect mankind from the mathematically calculated certain Malthusian check, which seems to have started recently, since 2008 and it is spreading around the world, humiliating nations, imposing poverty on households and raising the suicide indexes?

It seems that the crisis has first shown its appalling face in our country, but now has spread outside Greece, in several other Mediterranean countries (Spain, Italy, Portugal, Cyprus) and is crawling slowly but steadily towards north European countries. First symptom of the disease? The numbers in the stock exchange are dropping. Unemployment, poverty and criminality outburst follow. Finally, suicides, murders and low birth rates announce the upcoming genocide of nations. That is the time that Malthusian check is complete and the world struggles to start again from the beginning. But history is not just a linear line, so as easily to be predicted. It is an ongoing organism, affected by innumerable and unpredictable factors. Historical evidence, either positive or negative, has provided us with various deductions that things sometimes are not as pessimistic as they seem and potentialities could be triggered and change the flow of events. Our study is dealing with one of these powers, trying to prove using historical proportionality that “we could make it!” and help mankind out of its decline in this epoch of recession. Gynaecology and family planning could become the leading tools to build a new society, which will not be a slave to “spreads” and “debts” as it is nowadays, but a master that will decide free on its own destiny within a liberal, non-authoritarian system; a system, within it each of us could decide free and with respect to the others and without the latter to be imposed directly or not by anyone, neither the state nor the companies. What we reveal in our study can be unpleasant to the ears of rationalisation, but it can be proven scientifically and thus, it can potentially establish its presence in our scientific community, awaiting the upcoming reviews of our peers.

Family planning can touch the very sensitive matter of births and further, it can affect directly the birth rates. Consequently, we as gynaecologists could become the soldiers fighting for mankind’s survival, away from any political positioning. Is the above statement true and how could this be achieved? The answers for this are lying in history, as cited below in our article.

Material and methods
The web was searched (using several keywords: economic crisis, low birth rate, Greek recession, Malthus, demography, Ancient Greece, Roman Empire, history, European Union, immigrants, contraception, family planning), and several articles were investigated. The entire above data warehouse was very useful in Online Analytical Processing (relationship between nations destiny, birth rate and attitude towards foreign nations and immigration (4)), data-mining, like Association Rules (5), Sequence Analysis (6), Classification (7), Clustering (8), Forecasting (9). Statistics and decision making strategies were major means of applying demographic laws, as tools of secure interpretation of our observations on the web.

Results
History is abundant with examples which support the idea that low birth rate was involved in the vicious circle of the decline of a society: on one hand, it is the result of the crisis generated by the outpaced production, while on the other hand, it is the cause itself of socioeconomic dysfunction. The extraction of the conclusions is based on web material (88 web-sources) that was found interesting and was collected objectively, using criteria like quality and traffic of the website, impact factor of the medical web magazine, voting of the online statement. However, human error can never be excluded from experiment and our conclusions do remain safe by just accepting the restrictions of the researcher’s human nature. We then formatted tables which showed us the relation between three basic demographic concepts: birth rate, immigration and socioeconomic development. An overall Online analytical processing (OLAP) table is shown below, in Table 1.

An example of Association Rules is cited below, in Table 2.
The historical examples are ranging without doubt from ancient times to our era. We have noticed for instance, in classical Athens that Themistocles (524–459 BC) during his archonship abolished the social discrimination between pure-born Athenians and illegitimate (directly opposing to his rival Aristides, who was later ostracised for the above reason), manning in this way effectively the navy of Athens obviously first adopted in those years a positive attitude towards civilians, immigrants or not, whose one of the parents was not of Athenian descent and this was a successful demographic policy, to which the consequent thriving epoch was attributed. In contrast, in Classical Sparta, the alarming decline of Spartan citizens, as commented by Aristotle (384–322 BC), together with the practice of xenelasia (laws in ancient Doric Crete and Lacedemonia (Sparta), which proscribed the exclusion of foreigners into their commonwealths) was the major factors, which led gradually to the decline of the Polis during the following Hellenistic and Roman Age. Although their low rate of emigration as Spartans was ethically committed to their Polis and rarely abandoned it, low birth rate as well as wars and xenophobia (negative attitude towards immigration) was demographically the causes of the inevitable extinction of this Polis. Furthermore, in his work on the rise of the Roman Republic and its gradual domination over Greece, Polybius (200–118 BC) cites the phenomenon of low birth rate, population decrease, subsequent agricultural decline and city desertion in Greece, attributing them to Fortune (Tyche)\(^1\). We next studied that plagues and low birth rate among Roman citizens led to depopulation in the Empire and, in order for this to be combated, Barbarian tribes were actually welcomed into the Empire and encouraged to “set up shop” (as famous author and historian Will Durant states, ‘An Empire is not conquered from without, until it has fallen from within’). The Roman’s positive stance indeed towards foreigners balanced to some degree the low birth rate and prevented or decelerated the Empire’s decline. Some centuries later, the fall of the Byzantine Empire as well as its final act, the fall of Constantinople by the Seljuk Turks in 1453\(^1\), is historical examples which also verified the Malthusian check. Although Byzantium had reached its socio-economic zenith in the beginning of the 11th century, the following epoch (12th and 13th centuries) were unfortunately years of decline and intense reflection for the medieval hellenism. As the conditions changed, since the commercial activities of the Italian cities in the market, previously dominated entirely by Greeks had reduced significantly their financial transactions with the Empire, there was a wider impact on Byzantium’s economy: the agricultural sector was immediately disrupted by the withdrawal of the protective for small farmers laws and additionally, by the enforcement of favourable to wealthy aristocrats legislation. Poverty and low birth rate appeared, gradually presaging the end of the Eastern Roman Empire’s era. In 1492, after

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**Table 1** Online analytical processing: society’s historical outcome in relation to the main demographic factors

<table>
<thead>
<tr>
<th>Country’s historical development</th>
<th>Birth rate</th>
<th>Migration</th>
<th>Emigration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Thrive</td>
<td>27</td>
<td>6</td>
<td>29</td>
</tr>
<tr>
<td>Decline</td>
<td>11</td>
<td>39</td>
<td>9</td>
</tr>
</tbody>
</table>

**Table 2** Historical connection between socioeconomic development and birth rate/immigration/emigration (association rules technique)

<table>
<thead>
<tr>
<th>Country’s historical development</th>
<th>Birth rate</th>
<th>Migration</th>
<th>Emigration</th>
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<tbody>
<tr>
<td></td>
<td>High</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Thrive</td>
<td>+</td>
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<td>Decline</td>
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<tr>
<td>Thrive</td>
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<td>Decline</td>
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the Spanish rulers Ferdinand and Isabella promulgated the Alhambra Decree to expel Sephardic Jews from their domains, many immigrated to Salonica. The Ottoman Empire then granted protection to Jews as dhimmis (non-Muslim citizens of an Islamic state) and encouraged the new comers to settle in its territories. The coming of the Jewish element gradually pulled the city from the prolonged decline and boosted its economic, demographic and cultural level. According to some historians, the Empire’s invitation to the expelled Jews was a demographic strategy to prevent ethnic Greeks from dominating the city. We also observed that, although immigration in the above case had boosted the empire’s socio-economic growth, it had also triggered frictions between the Hellenic and Jewish element; frictions which led unfortunately again to the decline of Salonica in the 17th century. This became particularly obvious just after the Cretan War (1645–1669) against the Republic of Venice, when the latter lost its major overseas possession, the island of Crete (Handakas), and subsequently the centre of the global trade shifted from the Mediterranean to the Atlantic and North Sea. Inevitably, this change (the degradation of Handakas as a European market, in which Jews used to sell their goods) swept the Salonika Jewish trade in decline, and as the foundations of their economic well-being were based on loose social relations with the rest of the Hellenic population of the city, they could not adapt to the new conditions; conditions which led the Greeks to become in the 18th century a new rising economic power within the Ottoman sovereign. The above fact is a clear example on how communities in the same territory evolve according to the status of their cooperation; if it is negative, shrinkage will be soon experienced.

On the other hand, several modern articles have attributed the EU economic crisis to low birth rate. An article from the head of Vatican bank (2011) states that “children are the engine of recovery” and warns that an aging population and shrinking work force offset by mass immigration will inevitably produce social instability: “Those in power who hope to create a stable economy in Europe must define a strategy to concretely support families in their natural vocation to have children. They must invest in the family and in children in order to generate rapid economic growth, thanks to factors such as increased demand, savings and investment”. Another article in The Economist magazine stated that although there was always a link between hard times and family formation, its nature was controversial and continued, that Adam Smith (1723–1790) had thought that economic uncertainty had been bad for fertility, while others had argued that recession increased births by lowering the opportunity cost of children and encouraging women to have babies they wanted anyway during periods of unemployment. It was finally inferred (in contradiction to the previous article of the head of Vatican bank) that Europe’s recent experience supported Smith and the economy had acted on population trends through migration, marriages and births.

Discussion
The authors have referenced some of their own studies in this review. These referenced studies have been conducted in accordance with the Declaration of Helsinki (1964) and the protocols of these studies have been approved by the relevant ethics committees related to the institution in which they were performed. All human subjects, in these referenced studies, gave informed consent to participate in these studies.

Birth rate (=the rate of births in a population over time) is an index of national prosperity and to be more specific, high birth rate represents as well as enhances the social and cultural development of a nation, while on the other hand, low birth rate can be both a derivative and a cause of social decay. Migration, a movement of humans from one area to another, either immigration or emigration (depending on the direction of this movement), is also an index of national development, representing a demographic shift that may be both the cause and the result of specific social conditions.

According to the OLAP table of our study, a country’s historical development is proportionally linked to high birth rate and high immigration status and at the same time, can be inversely related with the emigration dynamics. This relation is indeed continuous and bidirectional, composing shots in a chaotic system, which our simplified analysis can hardly describe; the knowledge of what is the cause and what is the result can easily confuse and throw us towards the futility and the logical conflicts of determinism. Is low emigration a result or a cause of high historical development? Can high emigration lead to the aforementioned phenomenon and inversely? These are some of the questions arousing by the above-described approach of the events. Sequence analysis and association rules can help us to find some answers. In Table 2 we have noticed several combinations of the above-mentioned mechanisms. In some cases positive development (thrive) is related to high birth rates, high immigration and low emigration (enhanced population dynamics), while in others low immigration (already high cost of living as deterrent factor in a state) and/or high emigration (funds transferred from abroad in domestic banks, know-how acquired abroad but exploited afterwards at home, etc) are variously involved. On the other hand, negative development (decline) can be correspondingly linked to...
high/low birth rate and/or high/low immigration status and/or high/low emigration status. For example, if a country has structural and organisational problems, high population dynamics (high birth rate, high immigration movement, etc.) could even emphasise these intrinsic defects. Of course we predominantly meet low birth rate with negative historical development, while studying the recorded flow of the historical events.

Starting in Europe in the late 1800s and continuing today, birth rates have been declining in societies as they become more affluent, industrialised, and technologically advanced. In fact, fertility output is dropping so precipitously in some countries – such as Japan, Germany, and Italy – that their total population is now in decline. The newest explanation for declining birth rates, called the “kin influence hypothesis”, focuses on how people’s social networks have expanded. The evidence that social influence plays a role in the control of reproduction is strong, but the models cannot adequately explain why the development of small family norms always accompanies modernisation. Widening of social networks, which has been found to occur with modernisation, is sufficient to explain the change in reproductive norms if it is assumed that advice and comment on reproduction that passes among kin is more likely to encourage the creation of families than that which passes among non-kin and this advice and comment influence the social norms induced from the communications.

This would lead through a process of cultural evolution to the development of norms that make it increasingly difficult to have large families. Consequently, the institution of family must be promoted to a very important social cell where the proper knowledge that results in a healthy development of youths’ reproductive consciousness must be given mainly by the state through extensive scientific programs. Gynaecologists as the main expression of state’s intervention should undergo special training on female sexuality issues and become more sensitive and adequate on reproductive matters and family approach, without underestimating the importance of these concepts to the social tissue. In this way birth rate will be promoted and our genealogical roots will spread and become even stronger. Programs for parents on how they will approach their children concerning reproduction and family creation, lessons in school’s curriculum for pupils on the historical importance of the institution of family in the past as well as in the present and in the future, elimination of prejudices like the widespread idea in our country that “family creation is not consistent with education and career development”, etc. are just some of the activities which family planning can responsibly undertake. On the other hand, the idea of “family creation” should not become a tool of radicalisation and xenophobia; the new generation should learn to respect other nations and especially the migrants from other countries, as the healthy cooperation with them can indeed bring prosperity and financial strengthening, not only within the restricted borders of our country, but also in a more globalised sense of this word. Family planning and gynaecologists again are called to play a substantial role in this effort: the education of family and youths as parts of the international social tissue. Towards the aforementioned direction, governments may have scope for policy measures to moderate the fall of birth rate and promote the multicultural social model through adjusting the demographic tempo (“tempo” effect). Fertility and population dynamics seem to be particularly susceptible to government policy. For example, couples might respond to incentives like cheaper kindergartens or more parental leave by changing the spacing of children they want anyway. These policies can be better created with the vital cooperation of family planning organisations and gynaecologists, which our state should wisely financially boost them. However, we have to mention that the yeast for all the above to be achieved remains always the high quality of the general education provided in our society (for example, the education of the youths, of the mothers, of the doctors, in the families, through the media etc.); an education whose core is not inundated only with technological concepts (as today is intensely happening), but mainly with substantial human values and furthermore, with a deeper understanding of the mechanisms and the principles that harmonically constitute the reality and define the well- and the mal-function of things and concepts. This general consciousness could become the fertile ground where a healthy sexual and reproductive consciousness could grow and thrive.

One of the conclusions that are quite obvious from our study is that Greek society has to adopt methods of promotion on reproductive health as well as on applying positive attitude on immigration issues (rather than methods of isolation or appalling aggressive behaviours, recently shown on the media). Family planning and gynaecologists should be on the first line in order this to be achieved and Malthusian check, not only for our nation but also for whole mankind, to be prevented.

Conclusion

Historical proof of low birth rate leading as a factor to the catastrophe of a state is abundant. There is a sensitive dynamic balance between the Malthusian check and the low birth rate. We, as gynaecologists, could decelerate and perhaps reverse this decline in births by informing properly our population on their fertility options, by combating the unnecessary abortions (by launching campaigns for parents, schools and media) and

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finally, by cultivating a positive attitude towards immigrants to Greece, as they can contribute significantly to the recovery of our wounded economy. Such actions may protect our nation from the Malthusian Catastrophe, as it was prophetically described by Thomas Malthus and published in the “An Essay on the Principle of Population” in 1798.

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