Introduction

This paper reviews the research and development around CHESS (The Comprehensive Health Enhancement Support System) developed and tested by the Center for Health Systems Research and Analysis at the University of Wisconsin. The review will place particular emphasis on what has been found with regard to acceptance, use and impact of such systems by high risk and underserved groups.

Consumer Health Informatics Systems

Consumer Health Informatics Systems (CHIS) include patient-oriented interactive computer-based programs that provide information, decision, behavior change and emotional support for health issues [1,2]. Many of these systems track patient status and concerns. That role may grow as computers share patient information with providers.

CHIS operate on telephones, palm and Internet appliances, personal computers and public kiosks. Initially, CHIS were stand-alone systems. For example, our BARN system initially used Apple II computers placed in school libraries to help teens prevent smoking, drug abuse and sexual activity [3].

In the 1980s, these stand-alone systems began to add modems allowing users to communicate with each other and experts [4]. When the Internet could rapidly transmit information, many CHIS migrated to it. However, some continue in a stand-alone format because they need more speed and processing than is available on the Internet.

CHIS services can range from simple applications such as a single article or discussion group to ones offering many services including information, communication, analysis, personalized web pages and computer based games designed to promote behavior change.

A growing body of research evaluates impact of such systems in decision support [5–8] and educational roles [9–14]. A number of important findings have been made. For example, CHIS have been found to elicit more honest information than can clinicians and that information, when presented to the clinician, can significantly improve patient care [15,16]. Moreover a number of studies have found that depressed patients prefer computer over human interviews [17–19].

Our early research found that BARN (while initially designed to prevent health risk behaviors) was more effective in meeting the needs of those facing crises [20] and also was quite effective in reaching hard-to-reach audiences [21]. It was then that we changed our focus from developing and testing computer systems for primary prevention to using them to help people facing life threatening illness with a particular emphasis on underserved populations [22]. Hence our research around the resulting system (CHESS) has been a primary source of empirical studies on the acceptance, use and impact of CHESS with particular attention to underserved populations [23,24].

**CHESS**

First developed in 1989, CHESS has been tested in several research studies and is now Internet-based. CHESS programs are based on needs assessment surveys typically involving several hundred patients and families. Users test relevance and readability of content created by clinical experts. Patients access CHESS through home-based computers. Many organizations offering CHESS lend computers to patients who do not have their own.

When users log on to CHESS they enter a code name and password to prove they are legitimate users. From the main menu (one example of which is shown in Fig. 20.1)