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increased positive affect, and increased self-efficacy for walking. Exercise also has been associated with enhanced quality of life and with improvement in aspects of cognitive functioning (e.g., verbal fluency, psychomotor performance). Exercise compliance is at the heart of all rehabilitation programs, and continued compliance (adherence) is essential for patients to maintain gains following the program. The relapse prevention strategy appears to be useful for patients with COPD in that it teaches patients to prepare for and respond to bouts of illness, during which they may be temporarily reluctant or unable to exercise. In addition, because negative mood states may be associated with reduced energy and diminished interest in activities such as exercise, strategies for improving mood also, in turn, are likely to contribute to better exercise performance. Ongoing studies have evaluated procedures to encourage individual, in-home exercise behavior, and recent data suggest the effectiveness of strategies such as directive auditory stimuli (e.g., music) for enhancing exercise performance among patients with COPD.

SUMMARY

Psychosocial effects of COPD include psychological distress, cognitive impairment, and reduced ADLs. Exercise training has a positive effect on all three areas of functioning. In addition, cognitive-behavioral strategies have proven useful in treating patients with significant mood disturbance and other behaviorally based problems, including continued cigarette smoking, poor eating habits, and noncompliance with exercise or other medical recommendations.

—Charles F. Emery

See also: Adherence to Treatment Regimen; Arthritis; Behavioral Treatment; Arthritis; Psychosocial Aspects; Asthma; Behavioral Treatment; Asthma and Stress; Chronic Disease Management; Chronic Illness; Psychological Aspects; Cognitive Function and Health; Diabetes; Behavioral Treatment; Diabetes; Psychosocial Aspects; Fibromyalgia Syndrome; Biobehavioral Aspects; Fibromyalgia Syndrome; Cognitive-Behavioral Treatment; Headaches; Psychological Management; Irritable Bowel Syndrome; Psychological Management; Irritable Bowel Syndrome; Psychosocial Aspects; Raynaud’s Disease; Behavioral Treatment; Smoking and Nicotine Dependence; Interventions

Further Reading


CHRONIC PAIN MANAGEMENT

Medical advances and interventions have yielded significant gains in life expectancy, but the increasing prevalence of pain complaints threatens to impair quality of life. Appropriate pain assessment and management present significant challenges for patients, health care providers, health care organizations, insurance providers, and health care policymakers. This entry provides an overview on chronic pain assessment and management.

INTRODUCTION

Pain involves damage to the body (e.g., twisting an ankle, burning a finger), communication that there is an injury from the site of the injury to the spinal cord (i.e., transmission), and last, communicating this information from the spinal cord to the brain where pain is perceived (i.e., perception). In addition, there is often an emotional response to pain. Pain is defined as an "unpleasant sensory and emotional experience associated with actual or potential tissue damage." This definition involves perception of a painful stimulus and reaction to the sensation, which includes a level of subjectivity to the pain experience. Thus, it follows that pain significantly affects overall health (i.e., a state of complete physical, mental, and social well-being). This definition for pain entails a broader concept than that typically employed in biomedical research and clinical medicine, transcending both physical disease and emotional distress.

In general, pain is described by a simple relationship to an inciting event or injury, which is generally protective and self-limited, especially in the acute (early) injury phase. Although most often a protective
phenomenon, pain can be detrimental, increasing morbidity (i.e., increasing heart rate and blood pressure, causing fear and anxiety). There is considerable overlap in the types of pain, although it is most often classified by duration or etiology as (1) acute (i.e., pain of less than 6 months duration), (2) chronic (aka, chronic nonmalignant pain, chronic benign pain; i.e., pain of greater than 6 months duration), or (3) cancer pain (i.e., pain that is attributed to cancer or is the sequelae of cancer treatment).

**IMPACT OF PAIN**

Chronic pain is estimated to be the third largest health problem in the world. It is also a national health problem with significant implications on health and wellness. The increasing prevalence of chronic pain has significant and potentially devastating socioeconomic and health ramifications. For instance, pain affects more than 75 million Americans. More specifically, back pain is estimated to be the leading cause of chronic pain and the second leading cause of all physician visits. Pain leads to more than 700 million lost workdays and greater than $60 billion in health care expenditures annually. Americans spend an additional $40 billion a year on chronic pain. Chronic pain is the most frequent cause of disability in the United States.

Chronic pain affects many facets of an individual’s life. Beyond the physical manifestations, there are significant suffering and psychological manifestations due to chronic pain. When compared to the general population, patients with pain have an increased psychological burden, as demonstrated by the high prevalence of posttraumatic stress disorder (PTSD), sleep disturbance, anxiety, and depressive symptoms, which independently increase morbidity and mortality. Pain does not occur in isolation and has a significant impact on the caregiver. In many chronic medical conditions, social health support systems diminish. Thus, lower social supports from caregivers and family members of people living with chronic pain are important factors that may have an additive effect in increasing an individual’s risk for psychological distress and suffering due to pain. The potential ways that chronic pain affects an individual’s health are shown in Figure 1, which illustrates how pain impairs physical, psychological, social, and economic functioning.

Despite the significant toll of chronic pain, there are no universal guidelines for chronic pain management. The U.S. Agency for Health Care Policy and Research (AHCPR) sponsored the development of guidelines for the treatment of acute postoperative and cancer pain as well as for chronic low back pain. Yet 70% of cancer patients die with uncontrolled pain, and nearly 40% of postoperative patients experience significant pain. This has profound effects on outcome (e.g., increased morbidity and mortality), quality of life, and health care expenditures. Clearly, as Americans live longer, the prevalence of pain will increase, impairing quality of life as well as health and well-being. Yet all types of pain remain relatively undertreated, and the adequate assessment and appropriate management of chronic pain remain a neglected part of medicine. To complicate things further, most physicians have received minimal pain education, although there are many different modalities available to treat patients with pain.

**DIFFERENCES IN CLINICAL PAIN**

The effects of pain vary substantially. For example, two patients with the same level of disease activity can differ greatly in terms of the amount of pain that they report and its impact on their lives. Little is known about how gender, aging, and ethnicity influence the effective provision of pain management. Biological, physiological, and sociological mechanisms have been proposed to explain the differences in the pain experience. These mechanisms include differences in the reproductive organs, sex hormones, central nervous system, pain-learning methods,
Culturally imposed factors, and social roles that pre-
dispose certain individuals toward increased respon-
siveness to a painful stimulus. How these differences
apply to the individual with pain remains unknown.

The literature indicates definite gender differences
in the prevalence of many chronic pain conditions.
Although prevalence patterns may vary by stage in the
life cycle, women have a higher overall prevalence for
most chronic pain conditions. Certain clinical pain
conditions (e.g., fibromyalgia, temporomandibular
joint disease, tension-type headache) that are unrel-
ated to the gynecologic organs are much more preva-
 lent in women. These chronic pain syndromes are
often characterized by increased experimental pain
sensitivity and enhanced vulnerability to experimental
pain, suggesting gender-based differences in pain
modulation. Gender-based differences in pain symp-
toms for both acutely and chronically painful condi-
tions as well as response to opioid analgesics have
been reported. The clinical implications of these
unique gender-related findings for pain management
in a chronic pain population are unclear.

MANIFESTATIONS OF PAIN

Differences in the ability to cope with pain have
been identified. Availability and satisfaction with
social support are important factors to consider in
adaptation to any chronic illness such as chronic pain.
An abuse history has been shown to affect chronic
pain symptoms and coping. For instance, chronic
physical or sexual abuse history (i.e., sexual or physi-
cal abuse that occurred during both adulthood and
childhood) might be an important predictor for the
development and maintenance of chronic pain states
in women. In addition, patient attitudinal differences
in regard to pain may influence the chronic pain expe-
rience. Limited awareness of the impact of chronic
pain and the scarcity of outcome studies may increase
the likelihood of the undertreatment of pain.

Variability in treatment based on gender can lead to
differences in outcome. The literature suggests that
physicians handle the pain complaints of women,
racial and ethnic minorities, and the elderly less
aggressively. The gender of the physician has also
been shown to contribute to variability in the treat-
ment women receive for pain. Differences in the way
women communicate their pain concerns may
increase the likelihood of their complaints being
attributed to a mental health disorder.

Disturbing differences exist in the treatment of
pain based on the patient’s age, race, and gender, with
women and ethnic minorities receiving lesser-quality
care. However, little is known about how patient
demographic and cultural factors influence pain treat-
ment-seeking behavior and treatment. Considerable
physician variability in the treatment of pain has been
demonstrated, revealing lesser goals for chronic pain
relief, less satisfaction in the management of chronic
pain, lesser treatment for women with pain, and
decreased ability to manage chronic pain versus other
types of pain. Physician variability and suboptimal
treatment strategies for chronic pain may lead to
increased suffering while adversely affecting an indi-
vidual’s overall health.

To address the inadequate treatment of pain, many
specialty organizations have developed guidelines for
pain assessment and management. In addition, the
Joint Commission on Accreditation of Healthcare
Organizations (JCAHO) developed pain requirements
for all accredited organizations. The requirements are
as follows:

1. Recognize the rights of patients to appropriate
   assessment and management of pain.

2. Assess the existence of and the nature and intensity
   in all patients.

3. Record the results of the pain assessment in a way
   that facilitates regular assessment and follow-up.

4. Determine and ensure staff competency in pain
   assessment and management in the orientation of all
   new staff.

5. Establish policies and procedures that support the
   appropriate prescription or ordering of effective
   medications.

6. Educate patients and their families about effective
   pain management.

7. Address patient needs for symptom management in
   the discharge processes.

PAIN ASSESSMENT

Pain is a subjective personal experience with no
objective measures. Models used to determine pain
perception in the experimental research setting do not
transfer well to the clinical arena. Thus, pain percep-
tion is subjective and personal. Each patient reacts to
a painful stimulus and the pain experience differently. Initial pain assessment requires a thorough history and physical exam.

The gold standard for pain assessment remains patient self-report. On initial assessment, health care providers should assess the patient for pain. Most commonly, the assessment of pain entails asking the patient to quantify his or her pain via a 10-point visual, numerical, or verbal analog pain scale (0 = no pain; 10 = worst pain). Another important component in quantifying pain involves assessing how comfortable and how satisfied patients are with their level of pain. A patient with a pain score of 7 (typically consistent with severe pain) may be completely comfortable and satisfied with his or her pain regimen while another patient may report a pain score of 3 (typically consistent with mild pain) and be uncomfortable as well as unsatisfied with the pain control. It is important to note that quantitative pain estimates from surrogates should not be used unless the patient is unable to report.

Other scales can be helpful in assessing pain depending on the patient's vision, cognition, and development. Both geriatric and pediatric patients as well as persons who are cognitively or visually impaired, non-English speaking, and racial and ethnic minorities may have trouble with using traditional methods to assess their pain. These communication challenges put certain populations at risk for the undertreatment of pain. Different scales have been developed and are available to address those with special needs and disabilities. For instance, elderly people may prefer to use word descriptors (e.g., "none," "mild," "moderate," "severe," "extreme") to quantify their pain, while children may prefer visual cues (e.g., faces). Of particular importance is that elderly people often minimize the impact of pain on their lives and may not use the word pain. Furthermore, they may view pain as a normal part of aging that they must learn to live with. Children may not be able to quantify their level of pain due to their level of development and may prefer to choose faces or to use colors to describe their pain. In addition, parental assessment of the child's behavior may be necessary.

A physician should assess persistent pain that significantly affects function or quality of life. Information regarding pain characteristics (e.g., burning, aching, soreness) is sought. Reports from family members and caregivers are often helpful in assessing pain. The comprehensive assessment of pain as done in pain centers often involves a pain diagram and an evaluation of psychosocial function. This often includes the completion of lengthy surveys (e.g., McGill Pain Questionnaire, West Haven Yale Multidimensional Pain Inventory) and pain diagrams. Mood assessment, especially depression (e.g., Beck Depression Inventory), as well as sleep disturbance, disability (Pain Disability Index), and social support relationships, are also done. Evaluations of physical functioning and limitations are also part of the exam.

Considerable misinformation regarding pain management exists. Physicians have received minimal education regarding pain and do not routinely ask about the presence of pain, yet it is one of the most common reasons that a patient consults a physician. Regulatory policies surrounding opioid analgesics may limit their prescriptions for pain management. Furthermore, insurance issues may also limit access to certain types of pain treatment. It is critically important for patients and their physicians to become partners in developing a treatment plan designed to improve the patient's quality of life. Thus, as partners in their own pain care, it is important that patients present their pain complaints to their physicians. It is extremely important and helpful if patients bring a notebook to the doctor appointments with questions and concerns regarding their pain.

Recommendations for Patients With Persistent Pain: How to Discuss Pain Complaints With Health Care Providers

1. Know your pain rights. Make certain that your health care provider is aware of your pain.
2. Describe the circumstances or events that led to the pain as well as the duration of pain.
3. Describe where the pain is located as well as its character, frequency (or pattern), and location.
4. Describe if the character or quality of your pain has changed.
5. Describe how bad the pain is (e.g., 0 = no pain, 10 = worst pain imaginable) today, on a good day and on a bad day.
6. Describe any precipitating and relieving factors (i.e., what makes it worse and what makes it better).
7. Describe any associated symptoms.
8. Describe how the pain has affected your life (i.e., sleep disturbance, weight gain or loss, eating changes, depressive symptoms, marital discord, alcohol and cigarette use).
9. Discuss any previous pain problems and any family history of pain problems.
10. Discuss current and previously used therapeutic modalities including prescription and nonprescription analgesics, over-the-counter medications, and nonpharmacological approaches. Note the effectiveness and side effects of each therapeutic modality.
11. Keep a pain journal or log with regular entries that include time the pain occurred, pain intensity and severity, medication(s) used, and how your pain responded.

After initial assessment (including physical exam) and determining the cause of pain, both the patient’s and the physician’s goals for pain relief should be established and agreed on. A treatment plan should be developed, since inadequately treated pain can lead to significant health problems (e.g., sleep problems, depression, anxiety, social isolation, health care utilization) while exacerbating other medical problems.

**TREATMENT FOR PAIN**

**Therapeutic Modalities**

The initial treatment plan involves obtaining a complete history and physical examination, review of laboratory and other tests, and documentation of pain. Since pain involves perception, transmission, and the initial injury, therapeutic agents work at many different levels.

**Education**

Education is an important step in treating pain. As a first step, information on the impact of pain on the individual, family, and society should be provided or obtained, since many things affect pain. In addition, education about different therapeutic modalities should be provided for patients, caregivers, and family members; health care providers; and health care policymakers.

**Nonopioid Analgesics**

*Acetaminophen* is a first-line drug and the drug of choice in relieving mild to moderate pain, especially musculoskeletal and arthritis pain. It is often used as a combination product with other analgesics. Since toxic levels can occur, doses should be limited to less than 4,000 mg/day in adults or less than the 3,000 mg/day in the elderly. It does not inhibit wound healing and can only be administered orally or via the rectum.

**Nonsteroidal anti-inflammatory drugs (NSAIDs)** are commonly used to provide analgesia. NSAIDs work at multiple places, including the brain, to provide analgesia. They primarily inhibit prostaglandins, which are produced by COX-1 and COX-2 enzymes by inflamed tissues in response to pain. Although NSAIDs are very effective analgesics, they have significant side effects and are the most common cause of adverse drug reactions (e.g., gastrointestinal bleeding, nausea, kidney problems), especially in the elderly. The traditional NSAIDs, which inhibit the COX-1 enzyme (e.g., ibuprofen, naproxen), may cause more gastrointestinal injury than the newer agents, which specifically inhibit the COX-2 enzyme (e.g., rofecoxib, celecoxib). When used with opioid analgesics, they can decrease the opioid analgesic requirements. However, NSAIDs should be stopped several days prior to surgery.

*Aspirin* is a common anti-inflammatory agent. However, it is of limited use in the chronic pain setting due to its many undesirable side effects (e.g., bleeding, bruising). Aspirin should be stopped prior to surgery.

**Opioid Analgesics**

Opioid analgesics (aka, narcotic analgesics) are the most common modality used for acute postoperative pain and are primarily used for moderate to severe pain problems in carefully selected patients with chronic pain. They are powerful analgesics (pain relievers), which primarily work in the spinal cord, brain stem, brain, and peripheral tissues to prevent the release of substances that cause pain. The opioid analgesics (e.g., morphine, hydromorphone, codeine, oxycodone, hydrocodone, methadone, and fentanyl) most commonly used provide significant analgesia via many different routes (i.e., oral, spinal, nasal, intravenous). However, opioids are often associated with undesirable side effects (e.g., constipation, respiratory depression, sedation, dependence, nausea, and vomiting). When prescribed, it is not unusual for the patient and physician to sign a contract describing conditions for their use, since they are often regulated.
Adjuvants

Antidepressants

The classical and most studied antidepressants, the tricyclic antidepressants (e.g., amitriptyline, nortriptyline, desipramine, and venlafaxine), have proven efficacy but also have more side effects than selective serotonin reuptake inhibitors (e.g., fluoxetine, sertraline, paroxetine) alone and in conjunction with other therapeutic modalities. Antidepressants have proven efficacy in the management of chronic pain (e.g., central poststroke pain, migraine and tension headache), especially neuropathic (nerve) pain (e.g., diabetic neuropathy, postherpetic neuralgia), and may decrease sleep disturbance. Chronic pain relief may occur without an antidepressant response, since their analgesic action is not mediated by the agent’s antidepressant activity. In fact, antidepressants bind weakly at the same site as opioids do. The analgesic activity is more rapid (3-7 days) than when used for their antidepressant activity (14-21 days). They primarily work to improve sleep and pain by increasing the levels of certain hormones in the spinal cord, brain stem, and thalamus (e.g., dopamine, norepinephrine, and serotonin) acutely and chronically by regulating receptors and the activity of these hormones.

Other Adjutants

Other adjuvant therapies have proven themselves to be extremely useful for pain problems. Antiseizure medications (e.g., gabapentin, valproic acid) are commonly used to treat painful neuropathies (e.g., radicular back pain, trigeminal neuralgia). In addition, commercially available local anesthetics impregnated in gauze (e.g., 5% lidocaine) and oral local anesthetics (e.g., mexiletine) have been useful in treating postherpetic neuralgia. Medications used to treat spasm often assist in treating pain (e.g., tizanidine, baclofen).

Complementary and Alternative Techniques

Simple comfort measures (e.g., ice, heat, massage, prayer, reassurance) have been used for generations to enhance analgesics and should be used as potential modalities to control all types of pain. Complementary and alternative techniques (e.g., distraction methods, exercise, relaxation techniques, and music therapy) are very popular and are being increasingly researched. For instance, acupuncture and acupressure have been used to decrease pain as well as the common side effects of traditional analgesics. Herbal medications (e.g., glucosamine chondroitin) are also beneficial in treating arthritic conditions. Nonpharmacological approaches (e.g., transcutaneous electrical nerve stimulation; TENS), used alone or in combination with appropriate pharmacological techniques, can be beneficial.

Chronic pain support groups are helpful as a mechanism for patients to improve their pain control. They allow patients to share their pain experiences while taking an active role in their recovery.

Nerve Blocks

Therapeutic nerve blocks (e.g., epidurals) are often used to provide anesthesia (using local anesthetics) for surgical procedures. Pain management specialists use nerve blocks in selected patients. They are most often used when the pain follows an anatomic distribution or when anesthetic techniques can be used. These highly specialized therapies are particularly helpful for cancer pain syndromes and disorders involving the sympathetic nervous system (e.g., acute herpes zoster, reflex sympathetic dystrophy). Nerve blocks are most successful when used in conjunction with other therapeutic modalities.

Manual Therapy

Physical therapy provides significant benefit for musculoskeletal problems to reduce pain and improve function. In addition, patients may benefit from aqua therapy to reduce stress in painful joints. Physical therapists with expertise in treating patients with chronic pain are desirable. Patients benefit the most when they are actively engaged in their care by participating in a structured program, both at an outpatient facility and in their home.

Psychological Counseling

Patients often have a psychological reaction and experience poor coping due to chronic pain. In general, maladaptive coping (e.g., catastrophizing, repression) and poor adjustment (e.g., poor information seeking, passivity) appear to be important contributors to diminished health. Cognitive and insight-oriented psychotherapy is often warranted and provides significant benefits. Those patients who are
addicted to or abusing any legal (e.g., alcohol, cigarettes) or illicit substances should be referred to experts in pain, addiction, and psychiatry. The major reason pain does not get better is the failure to realize that psychological component. By recognizing the impact of emotions, people living with chronic pain can reduce stress, enhance coping, and decrease the impact of pain.

Repeat assessments with the same tools used during the initial pain assessment should be done. Included in these repeat assessments is a review of goals as well as medications and side effects due to therapies.

REFERRAL

When, despite efforts to treat pain, the patient’s or the physician’s pain relief goals have not been met, referral to a multidisciplinary pain center for evaluation and treatment should be considered. The most successful treatment usually involves multiple approaches directed at treating the different components of pain via multiple modalities. Seemingly small changes in combination with multiple therapeutic modalities can often lead to significant improvement in a patient’s pain and quality of life. The following provides information on how treatment modalities might progress:

1. Nonopioid ± adjuvant
2. Opioid for mild to moderate pain + nonopioid ± adjuvant
3. Opioid for mild to severe pain ± adjuvant

Although chronic pain causes significant disability, an understanding of the treatment modalities available leads to healthier lifestyles, improved quality of life, and enhanced outcomes.

—Carmen Renée Green and Monica McPhail-Pruitt

**See also Chronic Disease Management; Pain:**

**Psychosocial Aspects**

**Further Reading**


Practice guidelines for chronic pain management. A report by the American Society of Anesthesiologists Task

CHURCH-BASED INTERVENTIONS

Throughout history, physical health has been a common component of the philosophy and the activities of religious organizations (ROs). However, as modern medicine emerged and intensive training and technology became the norm for the provider, medicine assumed more responsibility for physical health and ROs concentrated more on spiritual health. ROs did not ignore physical health, but their primary emphasis was on helping people with diseases to cope, rather than on disease prevention. As medicine continued to become more of a profession, the emphasis in ROs expanded to employing providers (e.g., parish nurses) or utilizing the RO facility as a clinic for medical care delivery.

As public health shifted from a focus on behaviors related to infectious diseases (e.g., sanitation, immunizations) to a broader view of health-related lifestyle factors and prevention of chronic diseases, funding agencies such as the National Institutes of Health began to include more funding for behavior change programs. Medical researchers began to partner more with behavioral scientists. In the mid- to late twentieth century, behavioral medicine researchers began to look to partner with various community organizations (e.g., work sites, schools) for program delivery as they searched for wider impact and recognized that many of these lifestyle behaviors are developed and maintained in the community. While ROs were included as partners in health care delivery, the programs implemented were rarely empirically evaluated and program development was not usually driven by behavior theory. This was due largely to the fact that most larger scale behavioral medicine research was federally funded. Fear of crossing the line of separation of church and state was a deterrent to both applying for and/or dispensing federal research funds for partnerships with ROs. Even private foundations shared this hesitancy. This resistance began to break down in the 1970s and 1980s with an accelerating interest in funding and in conducting such efforts. Thus, studies in ROs that include theory-driven behavior change interventions evaluated by sophisticated research designs are a relatively new phenomenon.

There are many advantages (and some disadvantages) for researchers, RO leaders, and congregations to become involved in research partnerships for studying behavior change interventions. For researchers interested in large-scale public health programming, ROs provide a channel with enormous reach. The 2002 edition of the Yearbook of American and Canadian Churches reports over 152 million members of those ROs in the United States that report figures. Since nonmembers often attend health events at ROs, a large majority of U.S. citizens are reachable through programming in partnership with ROs. In addition, RO facilities are everywhere. Along with fire stations and schools, ROs are generally permitted in all neighborhoods regardless of zoning restrictions. In addition to availability, the designs of RO facilities are compatible with education. For example, classrooms are often an integral part of their design. Also, ROs are viewed as places where teaching and learning are expected, unlike other sectors such as retail and work sites.

Furthermore, ROs provide access to minority populations. This allows involvement of these participants (who are often hard for academic researchers to reach) in a safe and trusted environment. The RO is often the primary community organization, especially in African American neighborhoods, and are very influential in Hispanic neighborhoods as well. ROs also have relatively stable memberships with individuals who change residences often while still remaining members of the same RO. This is particularly important when the study is longitudinal and retention of participants for follow-up evaluations is critical. In addition, ROs are the only large-scale organization that includes the entire family over many years. Other critically important social networks also may be accessed through the RO. These networks can be utilized and built upon to help achieve and sustain behavior changes that affect others as well as the participant (e.g., changes in nutrition and physical activity, weight loss/control, smoking cessation). Volunteerism in ROs is the norm, with many aspects of the organization staffed by volunteers. Such volunteers bring more than inexpensive labor. They are members of the social networks of interest in lifestyle